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PAPER TRADE JOURNAL

JULY 13, 1944

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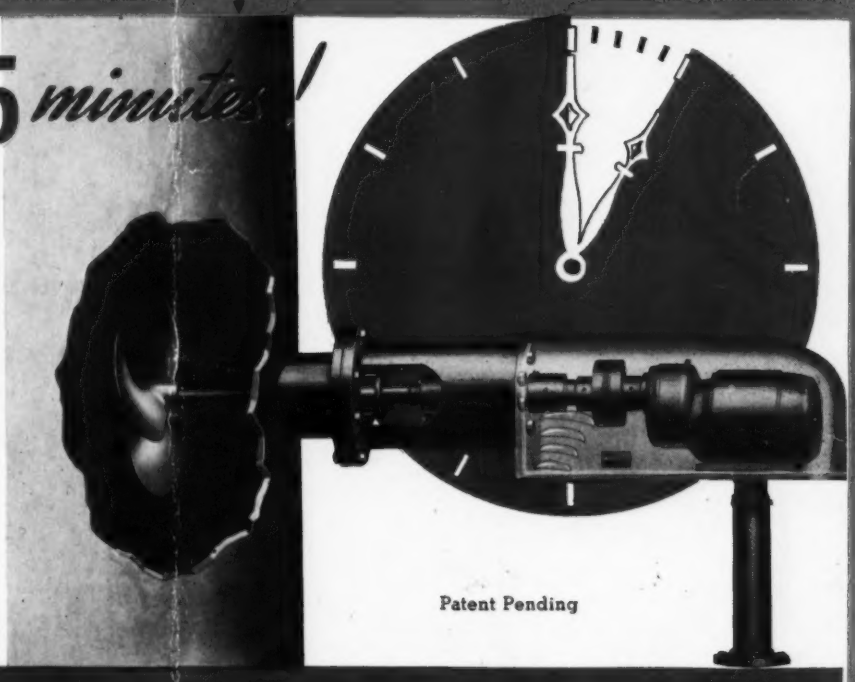

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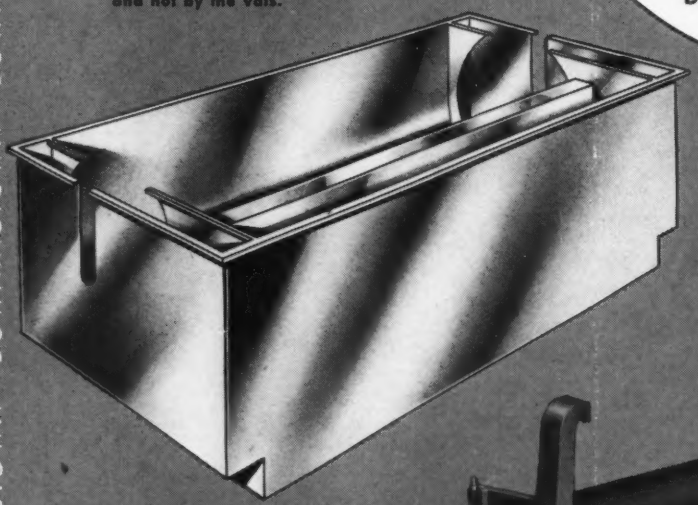

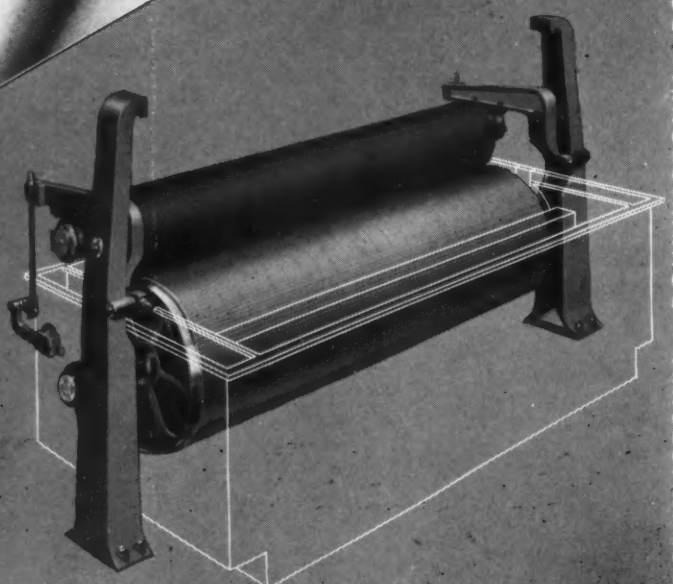

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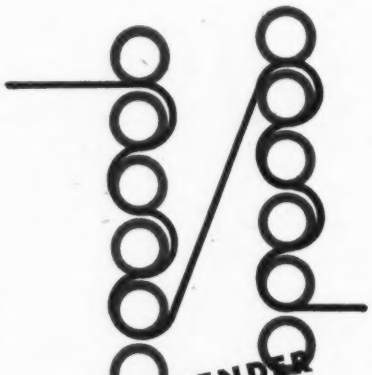

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Vol. 119, No. 2

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

July 13, 1944

Visions Post-War Employment in Forests

Director of Trees For Tomorrow Sees Large Potential Use of Labor In Reforestation of Cutover Areas — Announce Safety Contest Winners — Six Thousand Persons Attend Marathon Mills' Picnic.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 10, 1944—A huge post-war reservoir for employment in reforestation of Wisconsin's vast cutover areas was envisioned by M. N. Taylor, Merrill, Wis., executive director of Trees for Tomorrow, Inc., in an address July 5 before the Wisconsin Rapids, Wis., Rotary club at Witter hotel in that city.

Telling how Trees for Tomorrow was organized on February 29 of this year, Mr. Taylor pointed out that the Wisconsin River Valley has two of the three great needs for the paper industry—power and clear water—and that originally it had the third need—timber, which has disappeared for the most part in recent years.

Calling the paper industry the "heart beat of the Wisconsin River Valley," he termed it a $60,000,000 investment and told how there are 22 developed water-power sites between Oneida and Wood Counties.

By use of a series of charts, he illustrated how in 1870 Wisconsin was a "green carpet," containing 20,000,000 acres of virgin timber, and how, 70 years later, the Badger State contained only 40,000 acres—a few pin points in the northern section of Wisconsin.

"By 1970, with proper reforestation, we can re-establish forests in half of the state," he maintained. He said that Wisconsin has more to gain through an expanded forest program than either of its neighboring states, Minnesota or Michigan, because Wisconsin has more mills ready to handle the timber.

Trees for Tomorrow recently completed successfully a test program in Oneida County, one of the most typical of the cutover areas in the state, Mr. Taylor said, and similar projects are contemplated in other parts of the state. The organization next fall will offer Wisconsin farmers two seedling trees for every one cut down.

"All idle land not fit for crops should be reforested," he asserted. He cited several examples to show the advantage of community forest projects.

Mr. Taylor was introduced by George W. Mead of the program committee, who is president of the Consolidated Water Power and Paper Company.

Announce Kimberly-Clark Safety Winners

Winners in the six-month safety contest at the Badger-Globe mill of the Kimberly-Clark Corporation at Neenah, Wis., were Group 5 of the maintenance department, with 198 points. Group 2, with 195 points, placed second, and Group 4 was third with 192 points.

The contest, from January 15 to June 15, was based on the least number of injuries and accidents during the period. Each group was given 100 points to start. Ten points were subtracted for each lost-time accident, five for each accident requiring a doctor's care, and three for each unsafe practice. Ten points were added for no lost-time accidents, five for no doctor's care accidents, and three for no unsafe practices.

Each group reported weekly to Leo Madison, safety director, and frequent meetings were held.

Safety contests have long been sponsored by Kimberly-Clark in its various mills. The Wisconsin Council of Safety, which has members in industrial firms throughout the state, recently used the safety record of the corporation's mill at Niagara, Wis., as an example of what can be done to achieve good safety records.

The Niagara mill record showed that the accident frequency rate in 1940 was 12.43 lost-time accidents per million man-hours of exposure. This rate was cut to 5.14 last year and to 1.86 for the first three months of this year.

The Niagara mill is a typical paper and pulp mill employing between 550 and 650 employes. Operations include wood yard, both sulphite and groundwood pulp manufacturing, two book paper machines and a finishing room.

The mill follows the Kimberly-Clark five safety program factors: "Teach employes the safe way," in which new workers are told that the corporation places safety on par with quality and production; responsibility of supervisors for safety in their departments, including investigation and reports on all accidents; enforcement of rules; safety committees and inspections, with published reports; stimulation of interest through promotion of safety contests and rallies.

The corporation also encourages first aid training, in the belief that it makes men and women more safety-minded.

Marathon Picnic Largely Attended

Nearly 6,000 persons attended the annual picnic of the Marathon Paper Mills Company's employes last week in the Rothschild, Wis., park. Many families brought basket suppers, and lunch was also obtainable on the grounds. Swimming, baseball, contests and stunts were on the program.

Paper Supply in Midwest Continues Tight

Kraft and Sulphite Wrapping Papers Are Scarce With Book and Cover Items Also Tight—Some Improvement In Trade Supply Is Seen In Third Quarter Allocation Program—Other Market News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 10, 1944—Some local representatives of paper mills are reporting a slightly better break than had been anticipated as far as allocations for the third quarter of the year are concerned. There are, of course, many reported variations in the cut-backs allowed, these ranging from 15% up to a much higher figure, according to reports. Krafts indicated an even tighter situation from a civilian standpoint with kraft for wartime uses taking more and more away from even the most essential civilian needs. In books and covers a similar tightness was apparent as was the case in sulphites in all grades.

The order to concentrate on 16 pound mimeo, a long awaited "break" in adjustments of both size and price that had previously characterized the book market, was favorably received in Chicago quarters. The $12 a ton betterment, figured on the 60 cents a hundred weight basis, was not expected to do more than cover increased costs but was helpful, at any rate.

Need for Readjustment in Waste Paper

The waste paper situation here continued to reflect contrary opinions as to the need for readjustment in the waste paper ceilings. "Professional" pick-ups were reported at the same point as last week, while the amateur salvage drive program was being re-checked to avoid any failures such as Chicago encountered in the June drive.

Salesmen Plan Interesting Program

One of the most outstanding treats the Salesmens Association of the Paper Industry has had in many months seems slated for SAPEYE member and guest enjoyment on Monday noon, July 10. At that time the western division will have as its speaker-guest, Mr. Eugene Phillips, an executive of the Pettibone-Mulliken Corporation, Chicago makers of railway supplies. Mr. Phillips lived in Vienna, Austria, for many years and was identified with a European maker of printing inks with representation in five different European countries. Mr. Phillips and his family left Vienna just at the time of the Hitler invasion and the Dolfuss "incident." He had ample opportunity to thoroughly study political and economic conditions in Europe up until the late spring of 1938. He is expected to give the western division and its guests a real insight into those factors which brought about the present international situation. Mr. Phillips appearance before the SAPEYES was arranged by member Carl Trost of Hollingsworth and Whitney who is expected to introduce Mr. Phillips at the Hotel Sherman meetings next Monday.

Editorializes Container Standardization

The Chicago Journal of Commerce comments at length this week on the substantial economies in the use of container board brought about through standardization and redesign of shipping containers by the War Production Board. Under the heading "Savings in Paper" the editorial points out that "millions of tons of paper board have been saved after consultation with the technical section of WPB's paper board division." It is pointed out that overseas mailing cases for gifts to servicemen, formerly made in more than 20 varieties, have been standardized to a single style with a saving of 18% in paper board. It states, too, that the shipping carton proportion most economical—2 x 1 x 2—is also being applied more broadly in carton specifications, reducing requirements for drinking straw and pudding dessert cartons 28% and cereal and sugar packaging from 15 to 25%.

"These savings are important," the Chicago Journal of Commerce points out, "because pulp is used to make container board. Whatever savings are made should be reflected eventually in a more liberal allocation of pulp for paper. Yet it is interesting to note that while WPB is cutting container size to save pulp it recently ruled that punchboard makers are entitled to 65% of the pulp paper and board they used for punchboards in 1942. In justifying this allotment, WPB ruled that punchboards are not non-essential games or toys but failed to mention that they are universally used for gambling. One wonders just how much a punchboard adds, in morale or any other way, to the war effort."

Paper Industry Gives $25,231

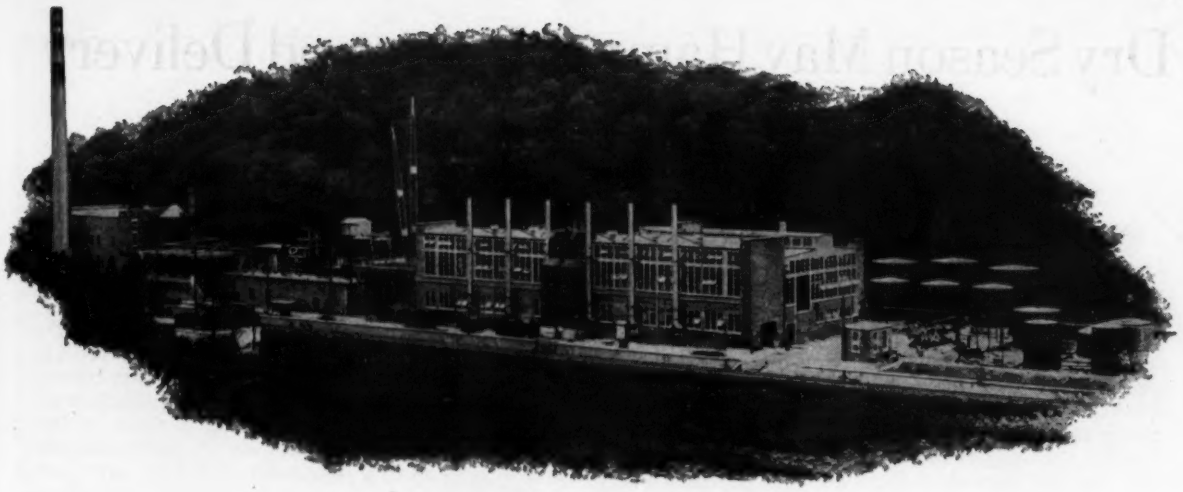
Roy K. Ferguson, president of the St. Regis Paper Company, announced at the Greater New York Fund's third report luncheon held June 8, that business firms and employee groups in the paper industry have contributed $25,231 to the Fund for the intensive period of its 1944 appeal.

The Paper Division is included in the manufacturing group of the campaign, the chairman of which, Herbert E. Smith, president of the U. S. Rubber Company, reported subscriptions of $211,381 during the same period.

Associated with Mr. Ferguson is A. B. Helfrich, of the same firm, who is serving as vice-chairman of the division. The chairmen and committeemen have pledged their continued efforts on the Fund's behalf until every prospect in the field has been given an opportunity to participate in the appeal.

Mr. Baker commended the paper division for its splendid work and the business concerns and employee groups the gifts of which to the 403 voluntary hospitals, health and welfare agencies, sharing in the Fund, assure the maintenance of a sound health program in this city.

The Greater New York Fund, which appeals exclusively to business concerns and employee groups, seeks to raise $4,500,000 for the year 1944. This is a vital share of the $22,250,000 required by the participating agencies, in voluntary contributions, to continue their welfare services to the community at present levels.



RCI Announces Volume Production of Sodium Sulfate and Sodium Sulfite

New RCI Plant at Tuscaloosa, Alabama, Nears Peak Output

Again RCI measures up to the requirements of American industry. Paper manufacturers, in particular, will be interested in this latest evidence: Mounting production at RCI's new phenol plant has opened up a prolific source of much-needed Sodium Sulfate and Sodium Sulfite. Technical grades of both compounds are now being produced, and eventual capacity production should measurably alleviate shortages in these chemicals.

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Dry Season May Hamper Pulpwood Delivery

Canadian Pulp Manufacturers Concerned At Low Water In Streams —Increased Demand Seen For Pulp In Renewed Activity In Production of Munitions In Ontario — Other Late Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., July 10, 1944—Although southern Ontario, up until two weeks ago, had a plethora of rain, very little of it reached the more northern forests, with the result that pulp and paper interests are beginning to be concerned about some of the pulpwood cut last winter and still lying on the banks of streams far from the mills. Rainfall in the more northerly districts was unusually light during the spring and considerable pulpwood could not be floated down to the mills. Unless the remainder of the summer is more favorable, there is some apprehension that Canadian mills may not be able to make good on their promise to deliver 200,000 tons of newsprint every month this year to United States publishers.

There has been little worry this year concerning power for pulp and paper mills. One or two mills in Ontario have not had all the power they could use and these are so situated that they cannot be helped by diversion of power from Quebec, where there is plenty of power now for all purposes.

With the renewed activity in munitions making in Ontario, an increasing demand is seen for pulp products and this, too, may have some bearing on the ability of newsprint manufacturers being able to maintain their present deliveries. Reserves stocks, both at the mills and in the hands of publishers are lower than at this time last year. At the end of May stocks of newsprint at all North American mills were only 160,836 tons, or not much over half the normal tonnage. Transportation tie-ups, strikes or other difficulties could mean trouble for the industry.

Limits Weight of Drawing Paper

Grades of manila and gray-groundwood drawing papers that may be used in the manufacture of books, tablets, pads or fillers and as drawing or coloring sheets, exclusive of artists' drawing and drafting papers, are limited to a substance weight of 50 pounds per 500 sheets, 24 by 36 inches, the War Production Board Paper Division has announced. However, 60-pound substance weights, 24 by 36 inches, of all other grades of papers used in these types of products may be used. This makes it possible for school children to use 60-pound grades of paper other than manila or gray-groundwood papers as water color paper, WPB pointed out.

Wholesalers Sell More Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 10, 1944—Wholesalers' sales of paper in May totaled $7,320,000, a gain of 14 percent over the previous May, the Bureau of Census has reported.

The May sales were 10 percent above those for April. Sales for the first five months of the year totaled $38,903,000, a gain of 10 percent over those for the corresponding period last year.

Inventories by reporting firms gained 2 percent in May over April, but were 10 percent under those of the previous May.

Centralized Lubrication

How centralized lubrication systems increase the production output of machinery and at the same time make impressive savings in time, power and lubricating materials, is the theme of Bulletin No. 25, newly published by the Farval Corporation, Cleveland, Ohio. This 16-page booklet, printed in three colors, is a graphic portrayal of the theory and practice of mechanical lubrication. It opens with a study of the machinery lubrication problem and of the economies that are inherent in a system which delivers lubricant to all bearings in exact measured amounts regardless of location. This information is faced by a large close-up of a Farval Manual Dualine System at work. There follows an explanation, by means of six cutaway drawings in color, of how the Farval measuring valve operates to deliver a measured amount of lubricant, and why it can do this without recourse to springs, check valves or small ports. The construction and operation of both manual and automatic pumping units, which provide the high pressure source of lubricant supply, are similarly treated. The center spread is devoted to the economics of positive mechanical lubrication; and in the concluding pages a selection of 24 application photographs suggest methods of locating and mounting pumping units and feed lines on as many different kinds of machinery.

Goes With Mixing Equipment

Mixing Equipment of Rochester, N. Y., manufactured of Lightnin and Mixco Mixers, announces the appointment of Edgar A. Rogers as exclusive representative in Georgia, Alabama and the major portion of Tennessee.

Mr. Rogers received his technical education at the University of Arizona and Cornell University where he received the degree of Mechanical Engineer. He settled in the South shortly after the close of World War I in which he served as Lieutenant in the Air Service. Prior to United States entry in that war he had served as pilot with the French Air Forces.

Having been engaged in consulting and sales work in the chemical and process industries in this territory for many years, Mr. Rogers enjoys a wide acquaintance among manufacturers and engineers. He will make his headquarters in the Chattanooga Bank Bldg., Chattanooga, Tenn., from where he will be able to render quick personal service to the many users of Lightnin and Mixco Mixers in that territory.

J. R. Halkyard Made Asst. Gen. Mgr.

BOSTON, Mass., July 10, 1944—On June 1, J. R. Halkyard, who for the last five years has headed up the Industrial and Technical Papers Department of Carter, Rice & Co., Corporation, Boston, was made assistant general manager of the company.

"Jack," as he is familiarly known to his many friends in the trade, at present will give his attention primarily to merchandising and sales but will act closely in matters of general policy with C. A. Esty, president and general manager.

1 ONCE A PAPER MAN NAMED MOFFITT
WOOED A VERY COMELY PROFIT
ON PAGE 7. BUT FROM PAGE 8
RED INK SHOWED THROUGH. 'TIS SAD TO STATE.

2 "GO 'WAY! VAMOOSE! UN-SHOW-THROUGH! SCRAM!
"THIS PARTY'S PRIVATE!" CRIED THE MAN.
"IT'S ALL YOUR FAULT I'M SHOWING THROUGH."
RED INK SAID. "KNOW WHAT YOU CAN DO?"

3 "WHY, TO BE SURE," THE MAN REPLIED.
"BEHIND SOME 'TI-PURE' SOON YOU'LL HIDE."
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Obituary

Ben Alexander

Ben Alexander, aged 49, of Kirkland, Ariz., formerly of Wausau, Wis., president and executive director of the Masonite Corporation, died July 6 at Rochester, Minn. He had submitted to an operation earlier in the week. The body was taken to the home of his brother, J. S. Alexander, Wausau, and funeral services were conducted in that city last Saturday. Burial was in Pine Grove cemetery.

As president and general manager of the Masonite Corporation, which has its home office at Wausau and mills at Laurel, Miss., his official duties took him to Chicago, and he left Wausau about 1938 to make his home at Lake Forest, Ill. More recently he moved to the Kirkland ranch, where he followed the hobby of raising Hereford cattle and ponies known by the breed name of "quarter horse." He was president and director of the Diamond-2 Ranch Company at Kirkland.

He was a director of the following firms: Walter Alexander Company and the C. Francis Colman Company, Wausau; the Marathon Paper Mills Company, Rothschild, Wis.; the Alexander-Yawkey Lumber Company, Prineville, Ore.; the Arrow Land & Logging Company, Ltd., Timmins, Ontario; the McCloud River Lumber Company in California; the Yawkey-Bissell Lumber Company, White Lake, and the Gulf, Mobile and Ohio Railroad Company.

In 1942, he went to Washington, D. C., where he served as a member of the War Production Board, in charge of lumber, textiles and several other major industrial lines. He was credited with facilitating government purchase of certain items of Douglas fir, which was greatly needed, but which the government had been unable to procure.

Survivors are the widow; four adopted children; his brother, and a sister.

H. E. Manville, Sr.

H. Edward Manville, Sr., former Chairman of the Board of Directors of Johns-Manville Corporation, died June 27. Mr. Manville's death marked the passing of one of the pioneers of American industry who helped build the foundation of Johns-Manville. He had the indomitable spirit of the pioneer in an era when only men of initiative and determination could win success. His career typified the opportunities for achievement held out by the American way.

He is survived by the widow, Mrs. Estelle Romaine Manville; a daughter, Countess Estelle Bernadotte, now living in Sweden, and a son, H. Edward Manville, Jr., 1st Lieutenant now serving with the 848th Army Air Forces Specialized Depot, at Syracuse, N. Y.

Born in Neenah, Wis., February 6, 1872, Mr. Manville was one of three sons of the late Charles B. Manville.

Edgar D. Leonhard

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 3, 1944—Edgar Dorwart Leonhard, assistant general manager of the Paterson Parchment Paper Company, Bristol, Pa., died during the week at his home Hampton Road, Rydal, He was 50. Mr. Leonhard, a graduate of Stevens Institute of Technology in 1916, was associated for 25 years with the Paterson company, which was founded in 1885 by his father, the late G. Theodore Leonhard.

Surviving him are his wife, Ethel Smith Leonhard; two daughters, Mrs. William N. Morell, Jr., and Barbara Leonhard; two sons, Edgar D. Jr., and Michael A.; a brother, William C. and two sisters, Mrs. R. L. Anderson and Miss Margaret Leonhard. Interment was in Passaic, N. J.

Frank Cottrell

Frank Cottrell of Tiverton, R. I., president of the Cottrell Paper Company of Rock City Falls, N. Y., died in a hospital at Fall River, Mass., July 1, at the age of 88. Born in Tiverton, he was the son of the late Abram and the late Bridget Rogers Cottrell.

For many years Mr. Cottrell was a partner in the Church, Cottrell & Hathaway Fishing Company, with plants at Cole River, Mass., and Linekin, Me. When the company was sold to the Fisheries Company of New York he became president of the latter's plant in Portsmouth, serving for a year. Mr. Cottrell was treasurer and part owner of the Sakonnet Fishing Company of Tiverton. His wife was the late Mrs. Calista Church Cottrell.

Chemistry and Technology of Foods

The Interscience Publishers have just issued Volume I of a two volume series on the Chemistry and Technology of Food and Food Products, edited by M. B. Jacobs, senior chemist, Department of Health, New York City (Vol. I 952 pp. 7x10 with 218 tables and 79 illustrations). Volume II will be ready in September. Books on this subject have become of great interest to paper and container manufacturers because of the special packaging problems involved and the fast growing market for packaging materials. Forty-one collaborators have prepared a unified authoritative work by approaching the problem from the point of view that an expert in any selected subject is best qualified to write about it.

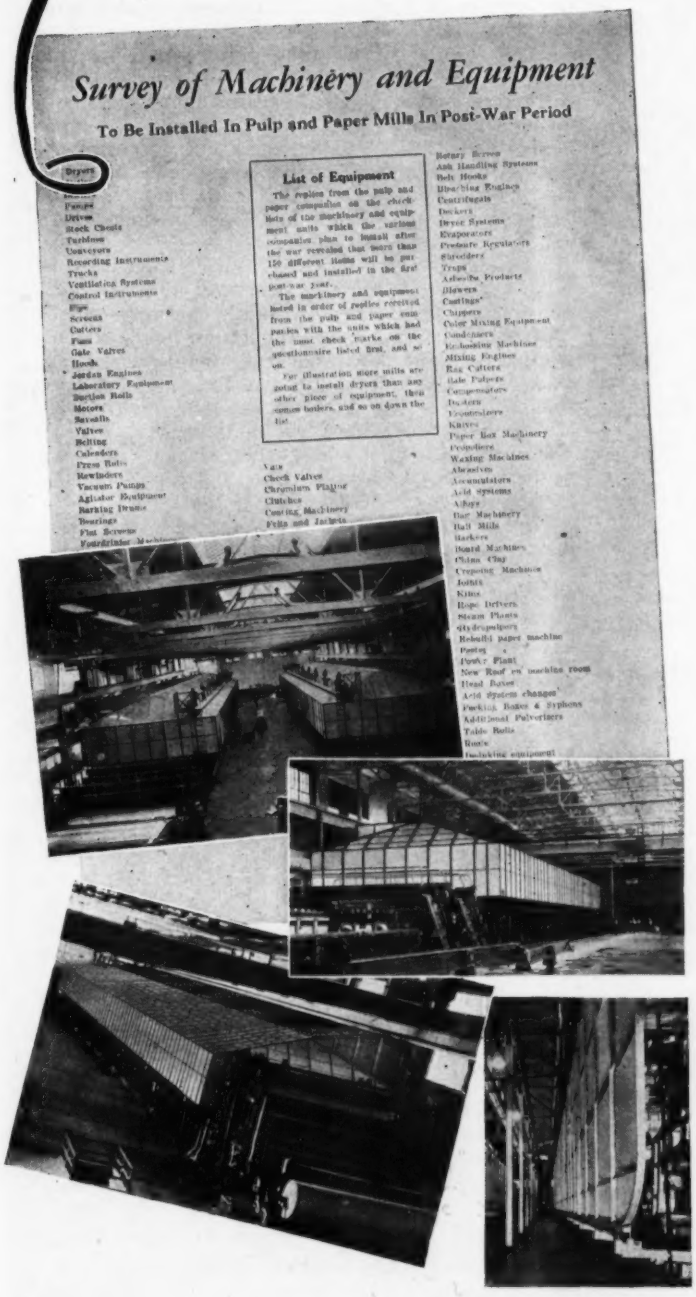
The two volumes are divided into a total of six parts. The first, on fundamentals, deals with the aspects of food chemistry which are common to all foods. The second part concerns the descriptive aspects of particular food groups. In part three, unit operations and processes applicable to most foods will be described. Part four will deal with maintenance of sanitary and quality controls of foods and food products. In part five, the principal methods of preserving foods will be delineated and part six will be concerned with production methods for the principal foods. The foods treated include milk, dairy products, meat products, eggs, fish, shellfish, bakery products, edible oils and fats, cereal grains, vegetables, confectionery, coffee and tea, condiments, etc.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York 17, N. Y. (Individual volumes $10.50 and set of two volumes $19.)

Container Corp. Gets Second "E"

PHILADELPHIA, Pa. July 10, 1944—A second star was added to the Army and Navy "E" award flag of the Container Corp. of America's Manayunk plant at Nixon and Fountain streets recently. Mr. Leonard Hindsley, 237 Glengary dr., Westgate Hills, mother of Leonard Hindsley, Jr., first employe to give his life in the war, raised the flag in the plant yard. Ira C. Keller, plant vice president, spoke.

Those New Dryer Stacks



WILL GET THE RIGHT START WITH

ROSS PANEL HOODS

New and additional dryers head the list of immediate postwar requirements for Pulp and Paper mills. To be more explicit, the item shown should read, "Dryers and Hoods," for the modern ROSS Panel Hood has become an essential part of every efficient stack of dryers.

Specify a modern fireproof, acid resisting ROSS HOOD for your new dryers and insure more rapid, even, economical drying; cleaner, lighter, more comfortable machine rooms; prevent costly deterioration of trusses, roof and walls.

Our Bulletin No. 17 describes ROSS Regular and Special design Hoods. Copy sent on request.

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CONTROL OF AIR FOR MODERN INDUSTRY

Paper Production for May

The following data cover all known mills and represent a continuation of the monthly statistics initiated in "Facts for Industry," series 24-2-1. For annual data and a description of the statistics, "Facts for Industry," series 24-1-2 should be consulted. All inquiries concerning these data should be addressed to the Bureau of Census, Washington 25, D. C.

	May	April[1]	May 1943
All types	1,484,480	1,402,095	1,460,522 [2]
Newsprint	61,018	56,630	69,380
Groundwood papers	49,106	48,682	46,559
Printing	20,300	19,045	14,041 [2]
Specialties	28,806	29,637	32,518 [2]
Book papers	124,481	117,335	134,130
General printing	88,361	82,001	95,593 [2]
Converting papers	35,903	35,247	37,881
Other book papers	217	87	656
Fine papers	82,828	78,020	86,727
Writing papers	61,118	56,822	65,673 [2]
Cover and text	4,610	4,702	4,065
Reproduction	4,522	4,039	4,248 [2]
Bristols [4]	7,414	7,512	7,592 [2]
Thin papers	4,991	4,799	4,760
Other fine papers	173	146	389
Wrapping papers	163,119	149,927	177,019
Bag papers	29,133	25,805	51,312
Glassine	6,953	7,069	7,279
Greaseproof	1,954	2,066	2,333
Vegetable parchment	2,844	2,460	2,795
Converting papers	70,780	66,712	53,069 [2] [3]
Wrapping papers	51,455	45,815	60,231 [2] [3]
Multi-well sack papers	35,986	30,727	23,955
Special industrial papers	22,097 [5]	19,171 [5]	16,755
Sanitary papers	69,904	66,014	71,888
Tissue papers	13,332	12,953	13,830
Absorbent papers	7,955	7,393	7,146
Building papers	75,729	73,124	66,073
Paperboard	778,925	742,119	747,048
Container board	378,403	351,031	353,915
Folding boxboard	178,395	165,870	176,613
Set-up boxboard	67,618	62,518	74,538
Cardboard	6,063	5,219	5,845
Building board	88,555	96,770	92,660
Miscellaneous other board	59,891	60,711	43,477
Tube stock	37,779	39,312	25,389

[1] Revised.
[2] Includes a small quantity of paper not classified by type.
[3] Data revised to conform with certain changes in paper and paperboard classifications, which became effective beginning January 1944. For figures covering other months of 1943, see "Facts for Industry," Series 24-2-5, Table 2.
[4] Includes Government Postal Card stock.
[5] Includes a small quantity of Special Industrial Papers having a basis weight of less than 100 pounds. Such paper was classified as Wrapping Paper prior to January 1944.

Farmers Ship Pulpwood

CHATHAM, N. Y., June 24, 1944—Announcement is made that farmers are harvesting a crop of pulpwood from their woodlands to help relieve a shortage. The first carload of pulpwood to leave Columbia county was loaded a few days ago near here and about several hundred cords will be transported to the Mechanicville plant of the West Virginia Pulp and Paper Company. Freight cars are to be loaded at East Chatham, Canaan, Ghent and other points. The demand for the product is great and it is expected that large quantities will have been shipped from this area by the end of the year.

Start New Machine at Longview

LONGVIEW, Wash., June 30, 1944—The newly installed paperboard machine at the Pacific Paperboard Company here has been placed in operation, it was announced by E. E. Flood, company president, last week.

The machine will produce 65 tons of paperboard a day, raising the production of the plant to 150 tons daily.

The machine was christened at brief ceremonies by Mrs. Iola Panzram, veteran woman employe of the conversion plant.

To Study Pulp Prospects in Alaska

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 5, 1944—Possibilities of the post-war establishment of a permanent pulp and paper industry on the Tongass National Forest in southeastern Alaska will be surveyed this summer by Lyle F. Watts, chief of the Forest Service, U. S. Department of Agriculture. The forest supports hemlock and spruce timber said to be sufficient to produce annually around 800,000 tons of sulphate or sulphite pulp.

Interest on the part of American manufacturers in the extension of the Pacific Coast pulp and paper industry to Alaska resulted early this spring in the Forest Service undertaking the laying out of an initial pulpwood logging unit in the southern part of the Tongass, near Ketchikan, and the drawing up of tentative sales contracts.

The laying out of the initial unit is expected to be completed early in August. James W. Girard, veteran timber expert, has been working out a system of appraising the timber in connection with possible sales to pulp and paper makers. The Forest Service chief will confer with him and Frank Heintzlman, Regional Forester of Alaska, and if the pulp timber on the unit is sold, it will be the largest timber sale ever made on national forests. If demand and economic conditions warrant, sealed bids may be asked for the timber after December 1, 1944.

Foresters estimate that under proper management there is enough timber in the initial unit now being laid out to allow the production of 150 tons of pulp daily for the first ten years, and of 525 tons daily for the next forty years. Surveys of the pulpwood possibilities made so far indicate that there are five or six units capable of sustaining similar production on the forest.

A condition of the sales for firms entering the Alaskan pulp timber field, according to the Forest Service officials, will be that they set up well-equipped plants geared to the sustained-yield timber supply of the unit.

They also will be required to operate so as to promote steady employment of woods and mill workers, and foster the building up of permanent, modern industrial communities. Sales agreements will require good logging practices, protection of scenic and recreation values and non-interference with salmon spawning in the streams.

Ample water supplies, cheap log transportation along protected sea channels between woods and mill, opportunities to develop hydro-electric power if desired, and climatic conditions that permit logging at least nine months of the year and all-year mill operation are factors which favor pulp and paper production in Alaska. The products can be put on ships at the mill for transportation to the ports of the world, or can be barged to Puget Sound down the inside passage.

E. D. Jones Makes Promotions

The directors of E. D. Jones & Sons Company, Pittsfield, Mass., at a recent annual meeting, elected Henry H. Williams as vice president in charge of sales, and Dwight E. Jones vice president in charge of engineering and manufacturing.

The appointments, the company reports, are in recognition of the notable contributions made by these officers to the progress of the company before and during the war periods.

Expert engineering and prefabrication of pre-tested piping sub-assemblies at conveniently located Grinnell plants reduces time-consuming field erection.

Expert PREFABRICATION

Together with complete modern facilities for expert prefabrication, Grinnell has a wide range of hangers to assure correct, *pre-engineered* pipe suspension.

Consult Grinnell Engineers for assistance on any piping installation.

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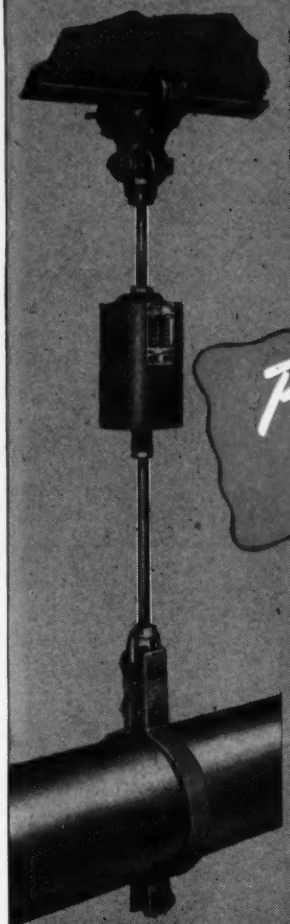
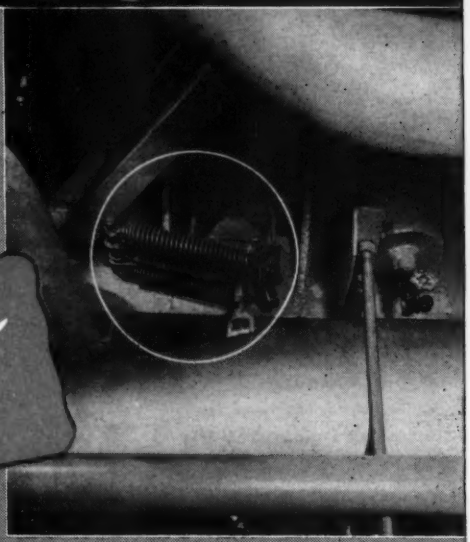


Pre-Engineered SUSPENSION



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Save engineering time required when hangers are "tailor-made" for each load condition. 14 sizes with a load range from 84 lbs. to 4700 lbs. Minimize changes in pipe supporting force • All-steel welded construction meets pressure piping codes • Unique swivel coupling provides adjustment and eliminates turnbuckle • Compact—require minimum headroom • Installation simplified by integral load scale and travel indicator • Easy selection of proper sizes from Capacity Table.

GRINNELL CONSTANT-SUPPORT HANGERS

The only hanger offering all these important features for power piping support. Constant support of piping in all "hot" and "cold" positions – full safety factor of the supported system is always maintained • Mass produced from standard precision parts • Individually calibrated for each specific installation • Rated capacity of each model varies with the size of the springs used. Overall dimensions of the hanger remain constant • Minimum headroom required.

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FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Weeks Ending July 8, 1944

STOCKS

	High	Low	Last
A. P. W.	4⅛	3⅞	4
Armstrong Cork Co.	45⅞	43¾	43¾
Celotex Corp.	15⅛	14	14⅜
Celotex Corp., pf.	19½	18¾	19⅜
Certain-Teed Products Corp.	8⅞	8⅛	8⅛
Certain-Teed Products Corp., pf.	91¾	87	90
Champion Paper & Fibre Co.	30	28⅞	29⅛
Champion Paper & Fibre Co., pf.	114	113	114
Congoleum Nairn Co.	27¼	26½	27
Container Corp. of America	27	26	26¾
Continental-Diamond Fibre Co.	13⅛	12¼	12⅜
Crown-Zellerbach Co.	18⅞	17⅞	18½
Crown-Zellerbach Co., pf.	101¾	100½	101
Dixie Cup Co.	17¾	17½	17¾
Dixie Cup Co.—A.	45½	45⅛	45½
Flintkote Co.	26	25⅛	25¼
Flintkote Co., pf.	109	108½	109
Robert Gair	4⅞	4¼	4⅞
Robert Gair, pf.	17	15½	16¾
International Paper Co.	19¾	18¾	19
International Paper Co., pf.	84	83⅜	83½
Johns-Manville Corp.	99	96½	98
Johns-Manville Corp., pf.	...	...	...
Kimberly-Clark Corp.	38	38	38
Mac Andrews & Forbes	29¾	29	29½
Mac Andrews & Forbes, pf.	...	...	...
Masonite Corp.	48	46½	46½
Mead Corp.	11¾	10¾	11⅛
Mead Corp., pf. A-6%	95	95	95
Mead Corp., pf. B-5½%	...	...	...
National Container Corp.	17⅞	17⅝	17¾
Paraffine Companies, Inc.	61	60½	60⅞
Paraffine Companies, Inc., pf.	...	...	...
Rayoniers, Inc.	17⅞	16¾	17¾
Rayonier, Inc., pf.	32¾	32½	32⅝
Ruberoid Co.	34⅞	31¼	34⅞
Scott Paper Co.	42	42	42
Scott Paper Co., pf.	112	112	112
Sutherland Paper Co.	33	32½	33
Union Bag & Paper Corp.	13¼	12¾	12⅞
United Paperboard Co.	6⅝	6⅛	6¼
U. S. Gypsum Co.	85¼	83⅛	83½
U. S. Gypsum Co., pf.	175	174½	175
West Virginia Pulp & Paper Co.	27	26	27
West Virginia Pulp & Paper Co., pf.	107¾	107¾	107¾

BONDS

Abitibi Pulp & Paper Co. 5s '53	83½	82	83½
Celotex Corp. 3¾s '55	...	...	...
Certain-Teed Products Corp. 5½s '48	102	102	102
Champion Paper & Fibre Co. 4¾s '50	...	...	...
International Paper Co. 6s '55	108	108	108
International Paper Co. 5s '47	104½	104½	104½
Mead Corp. 3½s '53	...	...	...
West Virginia Pulp & Paper Co. 3s '54	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending July 8, 1944

STOCKS

	High	Low	Last
Great Northern Paper Co.	35⅛	35	35
Hummel-Ross Fibre Corp.	6⅞	6⅝	6¾
St. Regis Paper Co.	6½	6	6⅜
St. Regis Paper Co., pf.	...	...	..
Taggart Corp.	5¾	5¾	5¾

BONDS

American Writing Paper Co. 6s '61	100¾	100	100¾

Celotex Profits Off

The Celotex Corporation and wholly owned subsidiary for the six months to April 30, reports a net profit of $209,092, equal to 17 cents each on 755,472 common shares, compared with $481,657, or 63 cents each on 638,410 shares, for similar period of previous year; net sales, $10,025,146, compared with $11,485,930. Report states that consolidated net earnings for quarter to April 30, last, were $127,207, or 12 cents a common share.

Schumacher Earns $1.41

The Schumacher Wall Board Corporation for the year to April 30, reports a net income of $147,927 or $1.41 a common share, against $158,690 or $1.54 a common share for preceding fiscal year.

Changes Name to Marathon Corp.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 10, 1944—An amendment to the articles of incorporation by which the Marathon Paper Mills Company changed its name to "Marathon Corporation" and a comprehensive financial program were adopted July 6 at a meeting of stockholders at the company's office at Rothschild, Wis.

The refinancing and expansion program involves the issuance of $10,000,000 15-year 3¼% debentures to be placed privately and $5,000,000 cumulative 5% preferred stock, $100 par, a registration statement covering which was filed on July 1 with the Securities and Exchange Commission. Offering of the preferred stock will be made through a nation-wide group of underwriters headed by Lee Higginson Corporation. Stockholders also approved a two-for-one split of the common stock.

Concerning the change of name, D. C. Everest, president and general manager, announced that because of fundamental changes which have taken place in recent years in the character of the company's business through addition of new and expanded product lines for "food packaging" and development of the chemical division, it was felt that the present corporate name was no longer descriptive of the essential nature of the business now being conducted.

Crown Zellerbach Nets $2.19

Consolidated net sales of the Crown Zellerbach Corporation for the fiscal year ended on April 30 increased 16% to the record volume of $97,833,812 from the $84,656,362 sales of the previous year, according to a report just issued.

The consolidated net profit amounted to $7,603,441 after all charges, equal to $2.19 a share on 2,261,199 shares of common stock. This compares with $7,543,287, or $2.16 a share, for the preceding year.

Indebtedness to banks was reduced from $3,500,000 a year ago to $2,500,000 as of April 30, 1944. In May, this year, the indebtedness was further reduced to $1,500,000, of which $500,000 is due in 1945 and $1,000,000 in 1947, with interest at 2¼% per annum.

Current assets on April 30, last, totaled $38,044,614 and current liabilities were $8,230,951. Working capital was $29,813,663 against $25,699,924 a year earlier.

Abitibi Profits Up in 1943

The Abitibi Power and Paper Company, Ltd. (Canada) and wholly owned subsidiaries, exclusive of Provincial Paper, Ltd.—For 1943: Report of receiver and manager shows profit of $4,708,093 after depreciation and income taxes, but before bond interest. After reserve of $3,777,240 to meet possible interest demands on bonds and accumulated interest, there was a balance of $930,853, which was applied against deficit from operations account accumulated during period of receivership. Profit for 1942 was $3,899,392 before bond interest. After $3,568,678 reserve for bond interest, there remained a balance of $330,714. Current assets as of Dec. 31 last, including $12,611,032 cash and Dominion bonds, amounted to $28,148,126 and sundry liabilities were $2,616,141. This compares with cash and Dominion bonds of $11,254,384, current assets of $27,284,571 and sundry liabilities of $2,549,298 at end of 1942.

Regulated SECTIONAL DRIVE

New G-E system refines speed regulation of sectional drives—combines high accuracy and fast response

HOLDS SPEEDS PRECISELY—Speeds of the section motors are continuously held within 0.05 per cent of the preset level, despite variations in loading. A precise differential between one section and the next can be held over a wider speed range. Draw adjustments can be made smoothly.

RESPONDS LIKE LIGHTNING—To maintain section speed regardless of load changes, a voltage difference of the order of 0.1 volt is electronically amplified, then put into action by an instantly responsive amplidyne. There are no mechanical lags. Inertia is effectively counteracted.

ELIMINATES COMPLEXITY—There are no cone pulleys, belts, or carbon piles in the regulating system. Electronic voltage-reference and amplifiers are simple, standardized types that have proved their reliability on war jobs where lives depended upon them. Tubes (3 per section) are long-lasting "hard" types, and duplicate standbys go into service at the throw of a switch.

This new regulating system is just one more step in General Electric's continuous record of pioneering in the field of paper-mill drives. Centralized control, applied through sectional drives, has set new standards for wide-range flexibility and high speeds in papermaking. G-E auxiliary wet-end drives, and individual drives for chippers, grinders, stock-preparation machines, supercalenders, and winders have established exceptional performance records. G-E engineering combines, to an unusual degree, a specific understanding of paper-mill requirements with broad-based electrical experience in building and applying motors, generators, and control.
General Electric Company, Schenectady 5, N. Y.

Instrumentation Studies. XLVII*

The Measurement of the Stretch of Paper

By Staff of The Institute of Paper Chemistry

Concluded from Issue of July 6, 1944

Thus, in spite of satisfactory scale calibration of the individual instruments, the over-all agreement between the several instruments is not satisfactory. There seems to be no reason to doubt the values obtained with the Scott instrument, if allowance is made for the somewhat inadequate sensitivity of this particular model. Low sensitivity could not account for low values compared with the other instruments. In spite of their agreement, the relatively high values obtained with the Amthor and Schopper instruments appear unquestionably to be due to the action of the toggle which links the slider to the lower clamp. The toggle does not disengage until the tension in the specimen has fallen to a value determined by the weight of the lower clamp assembly and the strength of the spring which actuates the toggle. In the Amthor instrument this tension is 0.4 pound, and in the Schopper instrument it is 0.9 pound. If the specimen broke instantaneously and without sudden increase in rate of elongation just as it broke, the tension at which the toggle releases would not be important. However, that tension is important because the specimen does not break instantaneously and there is a rather sudden increase in the rate of elongation. As the specimen begins to fail, perhaps by tearing, the elongation increases rapidly and perhaps considerably before the tension falls to the value at which the toggle disengages and allows the pointer to come to rest. The greater the tension at which the toggle disengages, the less of this "failure elongation" is included in the indicated elongation. The desired elongation includes none of the failure elongation; it should be the elongation up to the point of failure. As was noted earlier, the Schopper values tend to be slightly less than the Amthor values, an observation which may be explained by the fact that the toggle of the Schopper instrument disengages at a higher specimen tension than does that of the Amthor instrument. In both instruments, the principle of the toggle link is unsatisfactory.

The Clark instrument makes use of a somewhat similar principle in that the horizontal bar engages the vernier rod until the tension of the specimen falls to about 2.2 pounds (1 kg.). The generally lower percentage stretch values obtained with this instrument, as compared with those obtained with the Amthor and Schopper instruments, may be accounted for by the higher value of the tension at which the indicating mechanism is disengaged. It is unfortunate that the Clark instrument could not be compared with the Scott or some other recording instrument. There is some question as to whether the vernier rod is released quickly enough, even though it appears to be released sooner than are the pointers of the Amthor and Schopper testers. On the other hand, the initial tension in the specimen should not be increased, as too great a part of the true elongation of the specimen would then occur during the clamping operation and would not be included in the indicated reading; it will be remembered that the elongation measured is only that which occurs after the start of the test. In fact,

TABLE III—COMPARISON OF PERCENTAGE STRETCH MEASURED ON SEVERAL STRETCH TESTERS

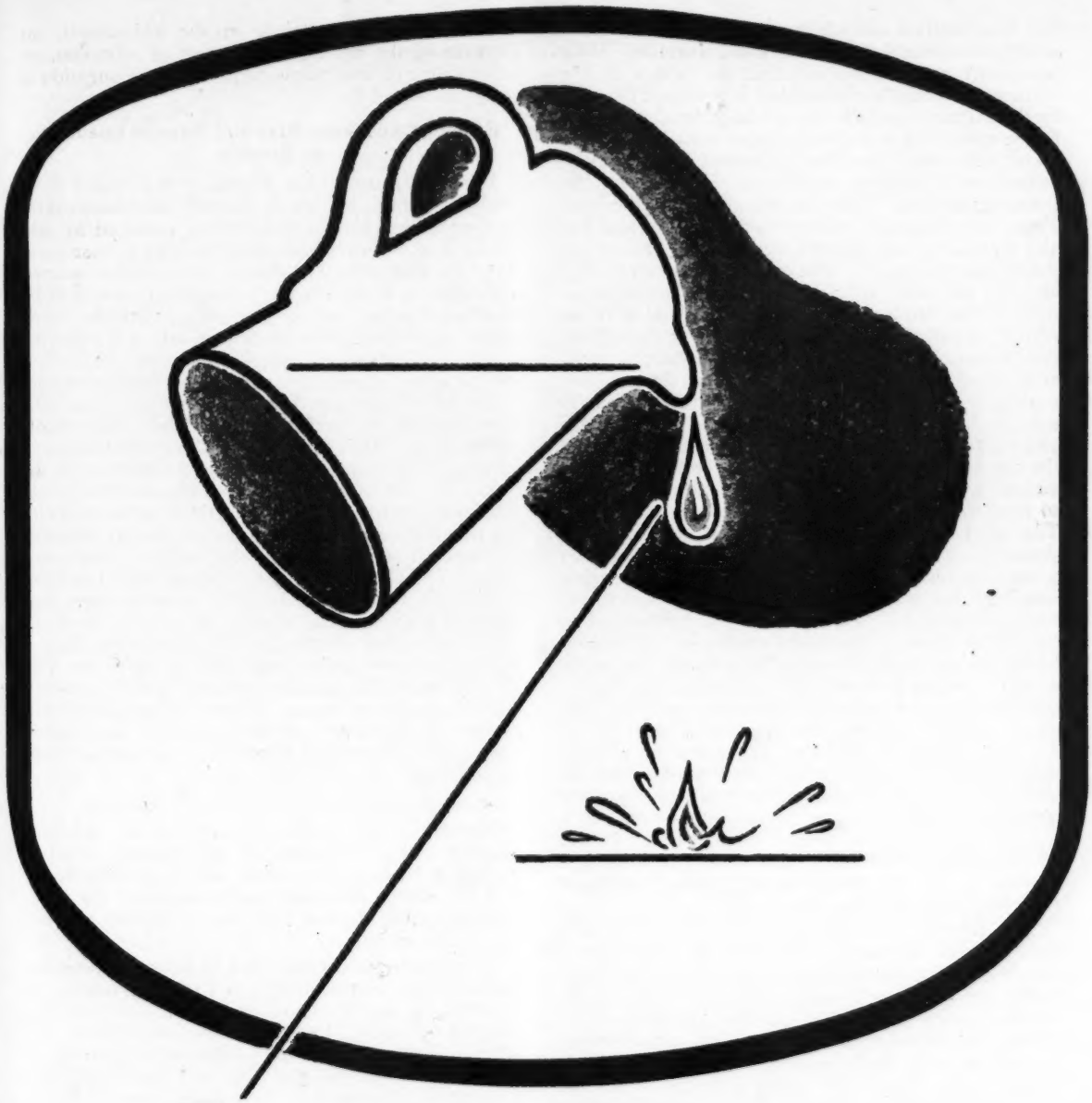
Sample	Caliper, 0.001 in.	Direction	Tensile Strength, lb.	Amthor Stretch, %	Schopper Stretch, %	Scott Stretch, %	Clark Stretch, %	Number of Specimens Tested
Kraft folder, 136 lb.*	10.9	MD	46.8	2.1	2.3			16
		MD		2.2	2.2			20
		MD		2.3	2.3	1.7		20
				(0.03)	(0.02)	(0.03)		
		CD	25.5	5.0	5.0			20
		CD		5.0	5.3			
				(0.05)	(0.07)			30
		CD		5.3	5.2			25
		CD		5.4	5.4			20
		CD		5.2	5.2			20
		CD		5.2	5.4			15
		CD		5.2		4.9		25
		CD		4.7	4.8	4.3		25
				(0.07)	(0.08)	(0.08)		
		MD		2.8	2.7		2.1	30
				(0.003)	(0.06)		(0.05)	
		CD		5.9	6.0		5.3	30
		MD			2.3	1.9		30
		CD			5.0	5.0		30
		MD			2.1	2.3		30
		CD			5.2	4.7		30
Sulphite envelope, 66 lb.*	4.2	MD	13.8	1.6	1.7			20
		MD		1.6	1.6			20
		MD		2.1	1.8	1.5	1.6	30
		CD	8.10	4.6	4.8		4.7	30
Sulphite test liner, 234 lb.*	17.7	CD	13.7	4.7	4.5			20
		CD			4.7	4.4		30
		CD			4.4	4.0		30
		MD	65.2		1.8	1.7		30
Rag-content bond, 34.5 lb.*	3.8	MD	20.2		3.4	2.6		30
		MD			3.4	3.4		30
		CD	10.1		8.5	7.9		30
		CD			7.6	7.3		30
		MD		3.7	3.8		3.6	30
		CD		8.7	8.7		8.7	30
Waxing stock, 27.2 lb.*	1.6	MD	5.50	2.2	2.1		2.0	30
		CD	2.87	2.4	2.3		2.2	30
Sulphite ledger, 91 lb.*	6.1	MD	32.4	1.9	1.7		1.4	30
		CD	15.3	4.4	4.6		4.4	30

* Basis weight (25×40—500)

the tension of 2.2 pounds is too great for some specimens which fail under tensions of 10-15 pounds or less. This may be seen in Fig. 8, which shows the load-elongation curves for several typical papers obtained with the Scott tester. The curves are displaced along the elongation axis to avoid confusion. In at least one case, a serious error would be introduced by putting the specimen under an initial tension of 2.2 pounds and neglecting the elongation due to that load, as is done in the case of the Clark instrument.*

It should be remembered that the Clark tester was not hand operated with the crank during the tests reported in Table III. The temporary lever which replaced the crank was driven by the Schopper mechanism in order to control the rate of loading, which could not be done well by hand operation, so that the loading time for all instruments might be made the same. However, the Clark instrument has an idiosyncrasy which is unique among the four instruments

* The designer informs us that the instructions furnished with the instrument were incorrect and that this tension should have been 1.1 pounds. Reduction of the initial specimen tension to this value would essentially eliminate the error just discussed. However, reduction of the tension to this lower value would aggravate the error resulting from the failure of the mechanism to release the vernier rod promptly at the onset of failure.



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that were studied and which contributed to the desirability of automatic rather than hand operation. This peculiarity rests in the fact that the release of the vernier rod by the horizontal bar is governed not only by the manner in which the specimen breaks but also by the speed with which the plunger rises—i.e., by the speed with which the crank is turned. This can be demonstrated without a specimen in place by the following method: With the plunger down, the horizontal bar is engaged with the top of the vernier rod and is held in engagement by pressing against the clamp with the finger. The crank is then turned rapidly but smoothly and, at the instant the motion is started, the clamp is released. It is found that the vernier rod remains engaged with the bar throughout the motion and the scale indicates a displacement of more than 1.5 inches, which is the maximum scale reading. The reason for this undesirable result is that, because of the rapid motion of the plunger and rod, the force exerted by the vernier rod against the bar is so large that the friction between the rod and bar and between the bar and its guide is sufficient to hold the bar in place against the spring tension. The speed with which the crank must be operated to obtain this large effect is probably faster than even a careless operator would use throughout a given operation, but when a strong specimen is tested, the force required for turning the short crank is great enough to cause a rapid acceleration of the motion when the specimen breaks, even though the reflex of the operator is rapid. This acceleration may be sufficient to cause an appreciable delay in the release of the vernier rod and, consequently, a spurious increase in the scale reading. The speed of plunger motion could be made much more constant by the addition of a second gear of such size that several complete revolutions of the crank would be necessary to move the plunger far enough to break the specimen. It would then be virtually impossible for a careless operator to jerk the plunger up so rapidly as to make the effect of acceleration important.

The differences between the values obtained with the Schopper instrument and with the other testers are, of course, even more pronounced if the Schopper tester is not counterbalanced. Table IV lists values for five samples obtained with the Amthor and the Schopper instrument without counterbalance. Twenty specimens were used in each test, and they were sampled according to the method described for the tests of Table III. The kraft folder and sulphite envelope are described in Table III; the sulphite bond has a tensile strength of 13.5 pounds.

The discrepancies noted here, together with those seen in Table III, contribute to an understanding of Carson's frame of mind when he wrote *(11)*:

"Perhaps one reason that the measurement of the elongation has not had much place in paper testing in the United States is that the method commonly used for determining elongation, an adjunct of the pendulum-type tensile tester, does not inspire confidence in the accuracy of the measurement. We always get a set of figures, of course, but there is usually some failure of the mechanism to respond instantly, some uncertainty in the adjustment, an increase of the reading as a result of vibration, or some source of uncertainty as to whether elongation is really measured."

TABLE IV—COMPARISON OF STRETCH VALUES OBTAINED WITH THE AMTHOR AND THE SCHOPPER INSTRUMENT WITHOUT COUNTERBALANCE

Sample	Stretch, % Amthor	Schopper
Kraft folder—MD	2.1	3.6
Kraft folder—CD	5.2	5.9
Sulphite envelope—MD	1.4	2.0
Sulphite envelope—CD	4.6	4.6
Sulphite bond—MD	1.1	1.7

Effect of Specimen Size and Rate of Loading on Stretch

When this study was begun, it was planned to study the effects of rate of loading, specimen length, and specimen width on the observed values of stretch. The Schopper instrument was available at that time. After the elongation and stretch scales were examined and found to be satisfactory, everything seemed to be in order for the study of the testing variables listed above. A considerable amount of data was collected before the seriousness of the jump in the stretch indicator was appreciated. After this jump was corrected by counterbalancing, additional data were collected before the arrival of the Amthor and Scott instruments. The failure of the three instruments to agree made it seem undesirable to go further with the tests. As was explained earlier, there seems to be no fault with the basic principles of the Scott instrument, but this particular model was not sufficiently sensitive to render it satisfactory for the study of these variables. The Clark instrument arrived after the Scott instrument was returned to the manufacturer and, although it appeared to measure elongation more accurately than either the Amthor or the Schopper instrument, it was not considered worth while to use it in these tests until it could be compared with a recording type of elongation tester. The following paragraphs review the literature on these variables and briefly present the information obtained in this limited number of tests.

Effect of Specimen Length on Stretch

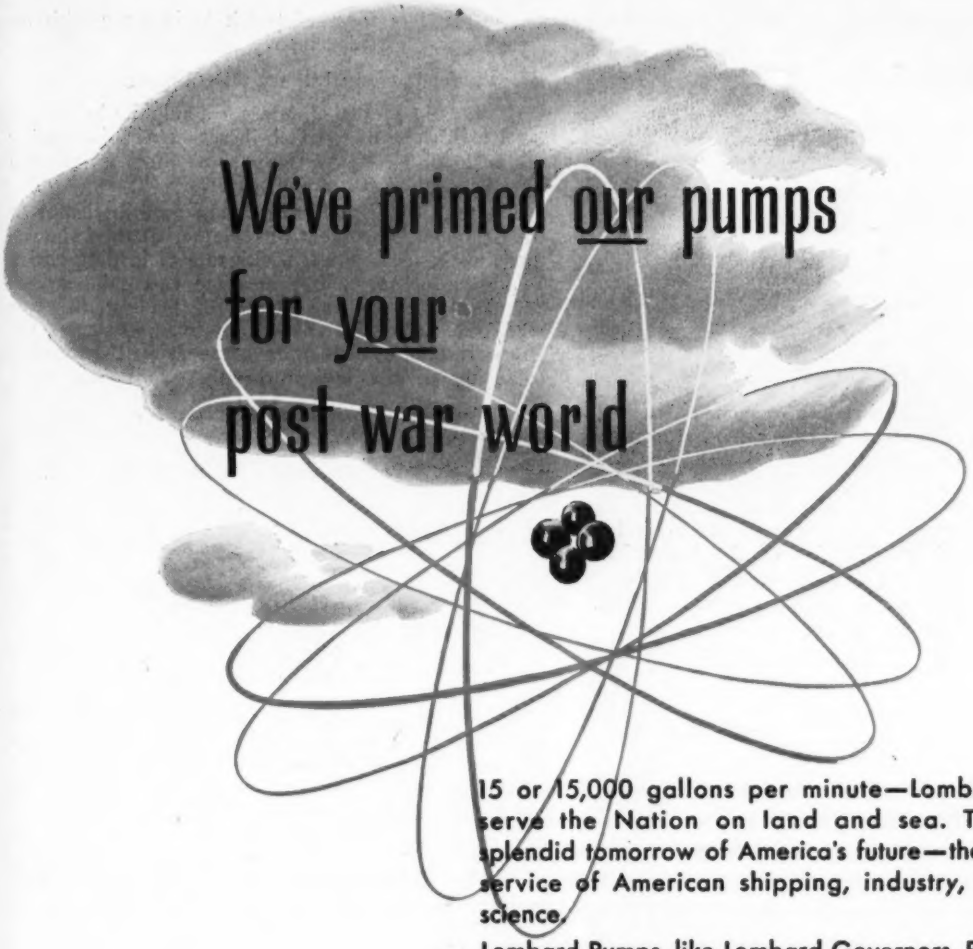
Houston *(12)* studied the effects of specimen length on the elongation of ten papers, including wrapping, book, writing, bond, and ledger. He found that the stretch decreased as the length of the specimen increased. Carson *(13)* has offered an explanation of the effect.

This trend was corroborated by tests on specimens having tested lengths of 2, 4, 6, 7.09 (180 mm.), and 8 inches, all having a width of 15 mm. Sampling was effected by cutting 150 consecutive strips from each sample. The specimens were collected in the order of cutting and dealt into five piles of thirty strips each. One group was tested in the counterbalanced Schopper tester with each of the clamp separations listed above. The conditioning and rejection of tests were carried out as previously described. The rate of loading was 1 pound per second. The results for only two papers are shown in Table V and in Fig. 12. These were selected because the results for the rag-content bond illustrate the erratic nature of some of the data and the results for the kraft folder were as con-

TABLE V—VARIATION OF STRETCH WITH SPECIMEN LENGTH

Specimen Length, in.	Kraft Folder*	Rag-Content Bond*
	Machine Direction Stretch, %	
2	2.7	4.0
4	2.5	3.5
6	2.3	3.6
7.09	2.2	3.5
8	2.2	3.3
	Cross Direction Stretch, %	
2	6.0	9.9
4	5.7	8.2
6	5.5	8.1
7.09	5.4	8.1
8	5.4	8.0

* These papers are characterized in Table III.



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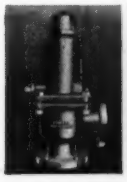

Relief Valve

Centrifugal Pump

Water Wheel Governor

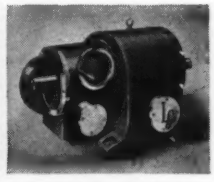

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TABLE VI—RELATIONSHIP OF STRETCH TO SPECIMEN WIDTH

I. Kraft wrapper, 18 lb. (25×40—500)
II. Sulphite bond, 31.8 lb. (25×40—500)
III. Test liner, 58 lb. per 1000 sq. ft.

Specimen Width	I	II	III
	Machine Direction Stretch, %		
3/16 in.	2.6(1.9)		1.9(3.3)
3/8 in.	2.8(2.6)		2.0(6.1)
15 mm.	2.9(3.6)		2.3(2.6)
3/4 in.	2.8(4.0)		2.4(3.6)
1 in.	2.7(5.1)		2.6(4.5)
	Cross Direction Stretch, %		
3/16 in.	3.6(1.9)	5.0(2.8)	3.7(2.8)
3/8 in.	4.2(2.5)	6.4(3.4)	4.1(3.6)
15 mm.	4.6(2.8)	6.1(2.9)	4.3(3.5)
3/4 in.	4.3(2.8)	7.0(3.1)	4.3(3.8)
1 in.	4.7(4.0)	6.9(3.6)	4.6(4.8)

sistent as any of the data. The sampling and number of specimens tested were adequate to eliminate specimen variation as a cause of the apparently anomalous values for the machine direction stretch of the rag-content bond. There seems to be no good reason for the relationship between length and stretch or percentage change in stretch to be other than smooth and continuous. Thus, the spread of the points for machine direction stretch of the rag-content bond is further evidence that calibration of the scale alone does not insure accurate measurement of stretch.

Effect of Specimen Width on Stretch

Houston *(12)* also studied the effect of specimen width on stretch and found that stretch decreased as the width of the specimen increased from ¼ to 1 inch. His pendulum-type machine was operated with a constant lower jaw speed of 6 inches per minute. Thus, the narrow specimens were elongated more rapidly than the wide specimens. Carson *(13)* discussed these results and offered an explanation in terms of the fibrous structure of paper. This explanation may stand reconsideration in view of the following data.

Three papers were tested with the Amthor instrument with thirty specimens of each cut to widths of 3/16, ⅜, ¾, and 1 inch and 15 mm. The conditioning, sampling, and rejection of results followed the schedule described for the tests of Table III. The specimens were cut with the corner of a razor blade; the width was carefully controlled by metal spacers which separated two metal straight edges. The data are presented in Table VI. The rate of loading was kept as nearly constant as possible by changing the weights on the pendulum. The numbers in parentheses are the loading times in seconds.

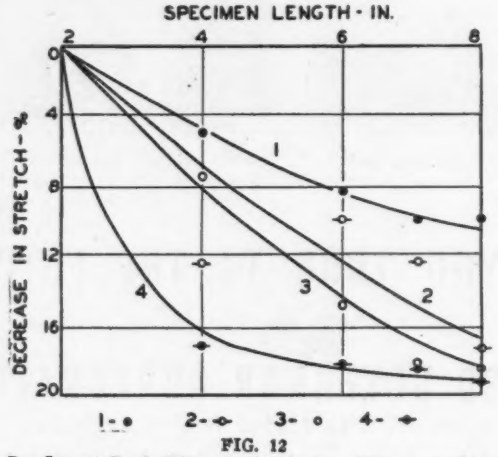

FIG. 12

2. Rag-Content Bond—MD. 3. Kraft Folder—MD. 4. Rag-Content Bond—CD.

The trend is for the stretch to increase with increasing width of specimen.

Effect of Rate of Loading on Stretch

Clark *(14)* presented data for a sulphite ledger paper which show that stretch increases with increasing rate of loading. A note to the same effect follows the TAPPI method for stretch *(5)*.

The tests conducted before the stretch indicator of the Schopper instrument was counterbalanced showed that the change in stretch with rate of loading varied among different papers; in some cases the stretch decreased with increasing rate of loading, in some cases the stretch increased, and in a few cases the stretch did not change appreciably. After the counterbalancing of the indicator, only two papers were tested. Thirty specimens of each were tested at lower clamp speeds of 3, 6, 9, 12, 15, and 18 inches per minute. The strips were 15 mm. wide, and a jaw separation of 180 mm. was used. The conditioning, sampling, and rejection of results were carried out as previously described. The results are listed in Table VII. The values in parentheses are the rates of loading in pounds per second. The kraft folder and rag-content bond papers are those described in Table III.

TABLE VII—EFFECT OF RATE OF LOADING ON STRETCH

Clamp Speed in./min.	Kraft Folder	Rag-Content Bond
	Machine Direction Stretch, %	
3	2.3(0.99)	3.5(0.84)
6	2.3(1.94)	3.4(1.66)
9	2.3(3.00)	3.3(2.57)
12	2.2(3.97)	3.3(3.38)
15	2.2(4.99)	3.3(4.21)
18	2.2(5.94)	3.4(5.06)
	Cross Direction Stretch, %	
3	4.9(0.83)	8.2(0.17)
6	4.9(1.65)	8.1(0.33)
9	4.8(2.54)	8.1(0.51)
12	4.9(3.33)	8.0(0.69)
15	5.0(4.19)	7.8(0.86)
18	4.9(4.96)	8:1(1.02)

Although the rate of loading varied by a factor of about five, the stretch did not change significantly for these two papers.

Conclusions

All four of the instruments which were studied were found to have satisfactorily divided elongation and stretch scales. Unfortunately, this virtue was insufficient to permit agreement of test results on carefully sampled specimens. The two pendulum-type indicating instruments (Amthor and Schopper) agreed reasonably well after the indicating mechanism of the Schopper instrument was counterbalanced to eliminate the pointer jump resulting from dynamic unbalance. The results obtained with these two instruments were apparently erroneously high in a number of tests, and the error was due to faults in design which caused the release of the indicating mechanism to be uncertain and the indicated elongation to include an undue part of the elongation which occurs during the failure of the specimen. The Scott tester uses a recording mechanism which seems to be free of objection except for its low sensitivity. However, the inconvenience of inserting the chart and adjusting the pen renders any recording instrument less satisfactory for routine stretch testing than an equally accurate indicating instrument. The Clark instrument, in its present form, has an unsatisfactory driving mechanism which permits a careless operator to work the instrument too rapidly and so obtain stretch values which are spuriously high. The mechanism which releases the stretch

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indicator is not without objection, but it appears to operate more satisfactorily than do those of the two pendulum-type instruments.

Corroborating results of other investigators, tests on two papers showed the stretch to decrease with increasing specimen length. Contrary to published information on change of stretch with specimen width, tests on three papers showed no change or a slight increase in stretch with increasing specimen width. Tests on two papers showed no significant change in stretch with rate of loading.

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(12) Houston, Paul L. Effect of length and width of test specimen on the breaking strength and elongation of paper. *Paper Trade J.* 76, no. 13:54-55 (March 22, 1923).

(13) Carson, F. T. An analysis of the strength of paper. *Paper Trade J.* 78, no. 12:51-56 (March 20, 1924).

(14) Clark, J. d'A. Some observations on burst, tensile, and stretch tests. *Paper Trade J.* 102, no. 2:40-42 (Jan. 9, 1936).

Lubrication of High-Up Bearings

Elimination of the hazards due to the manual lubrication of high-up and hard-to-get-at bearings on presses, cranes and other "off the floor" types of equipment is the subject of an illustrated bulletin just issued by The Farval Corporation, Cleveland, Ohio, under the title "Aloft is no Place for A.W.O.L. (absent without lubrication) Bearings." Bulletin explains the application of the Farval Dualine system for sending lubricant under pressure from a central pumping unit to every bearing on the machine. The dangers of personnel accidents, as well as shutdowns caused by faulty lubrication by hand, are contrasted with the safety and certainty obtained through the Farval method. The bulletin concludes with a page illustrating the various types of Farval systems with a typical application of each system.

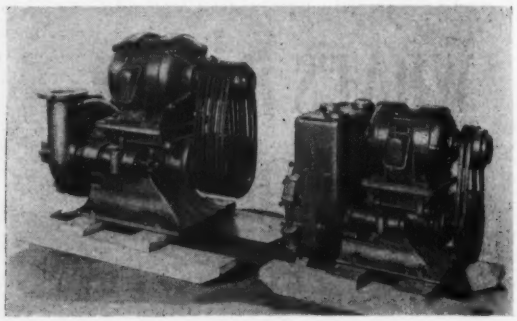
Finch, Pruyn Seek Men for Woods

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., July 10, 1944—Finch, Pruyn & Co., among the largest users of pulpwood for paper manufacture in this section and about the only concern operating its own lumber camp, has issued an appeal seeking school teachers and others with long vacations willing to devote their time to war work. Returning soldiers are also asked to help by taking jobs. The camps are equipped with single and double decker beds, hot and cold showers and food is issued in large quantities. Under the present wage scale expert woodsmen are able to earn exceptionally good wages and the less experienced can work at rates comparable with those in other lines of war work.

Amsco-Nagle Centrifugal Pumps

Previously available with motor directly coupled to the impeller shaft or with "V" belt pulley, flat pulley or sprocket on the shaft, Amsco-Nagle Centrifugal Pumps of the horizontal type are now available with the motor mounted overhead as shown in the illustration presented herewith.



PUMP WITH NEW OVERHEAD MOUNTING

This new arrangement offers the following advantages, according to the engineers responsible for its design. Pump can be operated at more accurate speeds. Speed changes can be provided where the duty calls for such changes. Motor is stationed at a more accessible point and is at the same time protected against flooding. Too, this arrangement requires less floor space for installation.

The manufacturer's Type "A" and Type "T" pumps, both horizontal, are available with this motor mounting. A 5" Type "T" pump and a 2" Type "A" (at right) are shown.

Amsco-Nagle Pumps are made by the American Manganese Steel Division of the American Brake Shoe Company, Chicago Heights, Ill.

Manhattan Receives First NAAN Award

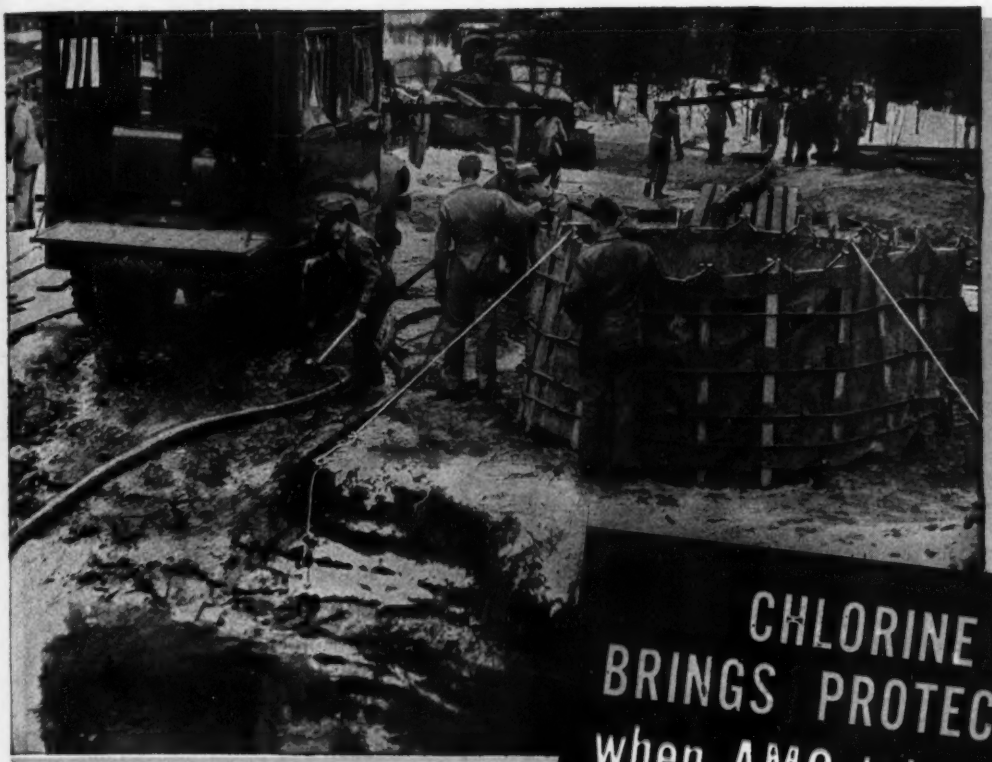
The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., Passaic, N. J., received the National Advertising Agencies Network First Award for its "Employee Relations Program" at a conference of the NAAN.

The "Employee Relations Program" covers company publicity and other promotional activities dealing with employee and servicemen relations, and includes: Manhattan Service News, the company's house organ; War Bond and other drives, Victory Gardens, Christmas Packages to Servicemen, Safety Bulletins, Conservation, Employee's War Exhibits, Absenteeism, and others.

This company was awarded second prize for this program last year, and received first prize for Best Business Paper Advertising Campaign for the past three consecutive years. The company has the Army-Navy "E" with Star and Treasury "T." Last year it also received the highest award from the National Victory Garden Institute for its Victory Garden project.

Goes With General Paper & Twine Co.

NEWARK, N. J., July 10, 1944—Wesley V. Howe, formerly with Beisler Weidmann Company, is now connected with the General Paper and Twine Company, 68-70 Clifford street, as secretary. Henry W. Siegel is treasurer and Fred D. Rappold is president of the General Paper and Twine Company.



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For these urgent and vital needs Penn Salt supplies much of its present expanded output of chlorine chemicals. That means, possibly, that we cannot fill your order for customary peacetime amounts. However, our wide wartime experience in this field and our increased facilities will be put wholeheartedly at your service as soon as Victory is won.

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New Tappi Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Victor A. Beede, head, Department of Forestry, Professor of Forest Management, The Pennsylvania State College, State College, Pennsylvania, a 1912 graduate of Yale University.

L. F. Bornstein, technical director, Synvar Corporation, Wilmington, Del. Attended Polytechnique Institute, Prague, Czechoslovakia.

H. C. Brown, Planning Engineer, Crossett Paper Mills, Crossett, Ark., a 1917 graduate of McGill University.

John B. Catlin, Coordinator, Technical Department, Kimberly-Clark Corporation, Neenah, Wis., a 1930 graduate of the University of Wisconsin.

J. Stokes, Clement, Jr., assistant to the president, Sandura Company, Inc., Philadelphia, Pa., a 1936 graduate of Harvard University.

Harrison J. Farra, chief engineer, Lobdell Company, Wilmington, Del.

Donald F. Gray, technical service department, Canadian Industries Limited, Montreal, P. Q., Canada, a graduate of McMaster University.

Burton H. Greenwood, animal glue and gelatin specialist and director of market research, Thomas W. Dunn Company, Inc., New York.

John Guthrie, sulphite superintendent, British Columbia Pulp and Paper Company, Ltd., Woodfibre, B. C., Canada, a 1940 graduate of the University of British Columbia.

Eugene G. Ingalls, pulp mill superintendent, Wausau Paper Mills Company, Brokaw, Wisconsin, a 1934 graduate of Bowdoin College.

John M. Masterson, executive assistant to the president, Wood Newspaper Machinery Corp., New York, and Plainfield, New Jersey.

William McIntosh, Jr., plant engineer, Union Bag and Paper Corporation, Savannah, Ga., a 1931 graduate of Alabama Polytechnic Institute.

Hamilton Moran, development engineer, Arvey Corporation, Jersey City, New Jersey.

Lawrence L. Packer, supervisor of pulp mill and old paper departments, New York & Pennsylvania Company, Inc., Lock Haven, Pa.

Clifford F. Pinkham, sales department, Crocker, Burbank Papers, Inc., Fitchburg, Mass., a 1923 graduate of Boston University.

Carl V. Simmons, engineer, International Paper Company, Corinth, N. Y.

Marion F. Smith, research chemical engineer, Phillip Carey Manufacturing Company, Lockland, Ohio, a 1936 graduate of the University of Cincinnati.

Robert A. Stewart, chief chemist, Continental Motors Corporation, Dallas, Texas, a 1940 graduate of the University of Indiana.

J. Glenn Strieby, superintendent, Kimberly mill technical dept., Kimberly-Clark Corporation, Neenah, Wis., a 1929 graduate of Iowa Wesleyan.

Edmund P. Strothman, industrial engineering consultant, A. O. Smith Corporation, Milwaukee, Wis., a 1924 graduate of the University of Wisconsin.

Bemis Bro. Bag Co. Gets "E"

[FROM OUR REGULAR CORRESPONDENT]

PEPPERELL, Mass., July 7, 1944—The Bemis Bro. Bag Company of this town which makes multi-wall paper bags for protecting Army equipment from the weather received the Army-Navy "E" last week.

Presenetation was made by Brig. Gen. Alden H. Waitt and Capt. George L. Menocal of the Navy. E pins were awarded to the 400 employes.

Powell River Uses Job Training Plan

First use of the U. S. job training plan has been made in the pulp and paper plant of Powell River Company at Powell River, B. C. under direction of A. G. Gardner, assistant maintenance superintendent. He is assisted by George Smith, of the Boeing subassembly plant, and Joseph Stevens, ground-wood division.

This new job-training program offers short, intensive training to supervisors to help them develop:

(a) The skill of leading, through job relations training program.

(b) The skill of planning, through job methods training.

(c) The skill of instructing, through job instruction program.

"The programs, patterned by the department of labor after those sponsored with industry by U. S. War Manpower Commission, do not pretend to give standardized solutions to all of man's troubles, but they are designed to help him develop confidence and resource and to give him practical experience in the use of the three basic skills necessary to his efficient performance as a foreman," said Harold S. Foley, president.

Admitting that the most critical shortage today within industry is the intelligent management of men, the programs offer a method whereby foremen learn the art of getting along with their men. They stress the fact that workers will do their best when they are respected as human beings and treated as individuals.

Job methods training is a streamlined version of the original work simplification plan which saved so many hours in U. S. war industries by asking, simply, "How would you do it?" of an employee.

It has been found to stimulate orderly thinking and changes the old "Do it my way and no argument" to "Let's see if we can work out a better way." It is not confined to foremen only, and is recommended for use by any intelligent employee, where it taps a vast reservoir of ideas and energy which lies inert in many industrial plants where men have too long been treated as cogs in a machine.

Keen interest has been shown in the courses by the Powell River employees who have already taken the lectures. A new series of lectures is scheduled to begin at the Powell Company's plant shortly.

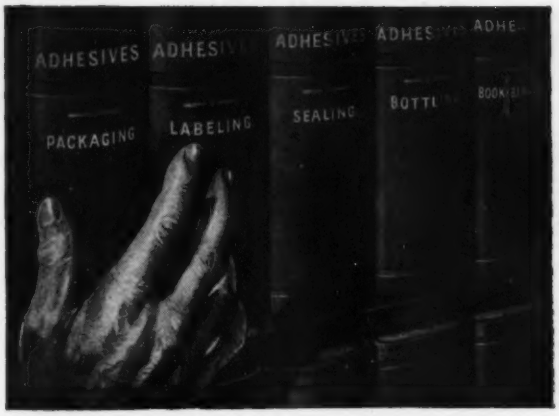
New Y Type Sediment Strainer

A new Y Type Sediment Strainer in the 125 lbs. Std. with semi-steel body and removable, perforated, non-corrosive metal screen in pipe sizes from ½ inch to 2 inches inclusive with screwed ends has been added to the ADSCO line of steam specialties and is described in Price Bulletin No. 89-4 just issued by the American District Steam Company, North Tonawanda, N. Y.

E. de Vries Co. Is Formed

Eli de Vries has announced the formation of E. de Vries Company with offices at 220 East 42nd street, New York, N. Y., specializing in the world-wide export of paper, boards and paper mill supplies.

The new company is staffed by competent and experienced personnel and excellent foreign representations have been arranged.



LET'S LOOK IN THE BOOK

The key to difficult adhesives problems is found in the Arabol Library of Experience . . . more than 10,000 adhesives formulae. Each formula represents Arabol's continuing aim—for 59 years—to achieve the one best adhesive for each given purpose.

So when planning your post-war production, let's "look in the book" . . . Let's put to work the knowledge gained from solving thousands of problems for more than 100 industries, to help you solve your problems of the future.

Write Arabol and explain your post-war plans. An Arabol Service Engineer will be available to discuss your possible future problems fully —and confidentially — without cost or obligation. When writing, please address Dept. 79.

Arabol V Case Sealing Adhesives meet Government specifications for all overseas shipments. They are fast setting . . . hand or machine quality.

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PIONEERING SINCE 1885
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110 East 42nd St., New York 17, N. Y.
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Adhesives? . . ARABOL!

Paper Orders Pile Up

INDIANAPOLIS, Ind., July 10, 1944 —Little change has been seen in the last week in the wholesale paper market, or in the manufacturing branch of the industry. And what little change there has been is for the worse. It virtually is impossible for the local wholesale trade to fill back orders. Orders still pile up and stock supplies are down to a minimum. In order to get some grades of paper one has really to have priorities of the first water.

Newsprint demand is beyond all hope of fullfilment and publishers are turning down advertising every day. Of course, this is nothing particularly new, for this is the general rule.

The kraft situation here is in even worse shape than it has been. Demand for wrapping paper, bags and other items continued high last week but a lot of houses were completely sold out and a backlog of orders waiting.

There are some optimists here who believe that before the year is ended there will be an improvement in the stock supply, but this is pure conjecture. Just what they base their hopes upon is something also problematical.

Tissues were moving well last week. A shortage continued in cleaning tissues, but there appeared to be a fair supply of toilet varieties.

Naturally, all prices are hugging the ceiling.

Mill demand for waste paper continued heavy and local warehouses were low in stocks. Collections in this area have been better than they were some time ago.

Adhesive Problems

Step by step recording of necessary information required for proper analysis of adhesive problems is made easy with a new questionnaire adopted by Paisley Products, Inc., Chicago and New York City. Many industrial plants and war contractors requiring adhesives for new operations or in packaging war materials for export may not be aware of all the facts and information the adhesive chemist requires for proper study and reference. Accurate diagnosis can only be certain when all the facts pertaining to the problem are carefully considered.

Over 400 chemicals and raw materials are used in compounding modern industrial adhesives, and the working qualities can be adjusted to provide extremely accurate operation in industrial application. Consequently, correct data can narrow the selection of an adhesive to a fine point resulting in higher standards of performance, lower costs and the saving of precious time.

According to the Paisley Laboratory announcement, their "Adhesive Problem Data Sheet" for recording and transmitting problem information has already aided industrial concerns in the quick solution of fabricating and packaging adhesive problems.

Anyone desiring a copy may write direct to Paisley Products, Inc., 1770 Canalport avenue, Chicago 16, Ill.

Boards On Preferred Status

WASHINGTON, D. C., July 10, 1944 —Ten additional grades of paper and paperboard were added to the list of those papers and boards granted preferred production status by the Forest Products Bureau of the War Production Board on July 5.

An amendment to Direction 1, of Preference Order M-93 adds the following paper and paperboard products:

Offset paper; gumming sulphate and sulphite stock; waxing paper (18 pounds and up); base stock for ordnance wrap; tag stock, including light manila board; waxing tissue; milk bottle cap and plug stock; ammunition containerboard and similar specifications for armed forces; and dense fibre (innersoles, heels and leather board gasket, etc.).

At the same time certain items were deleted from the Direction, namely, file folder and other special industrial papers.

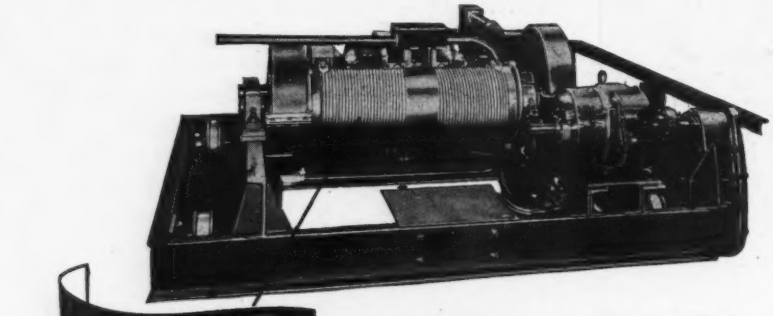
These changes were considered by WPB to be necessary in order to insure the production of the minimum tonnages of the above grades of paper and paperboard required for war and essential civilian purposes.

Blue Print Basis Increased

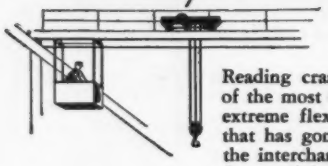
WASHINGTON, D. C., July 10, 1944 —The basis weight of blue print and direct line 50 per cent rag map paper has been increased from 17 to 20½ pounds, the War Production Board said on July 5.

An amendment to Schedule III of standardization and simplification paper Limitation Order L-120 establishes the new maximum weight in order to meet special demands for which the 17-pound paper was found unsuitable, WPB explained. Other grades of blue print and direct line papers, except 100 per cent rag content, are limited to the 17-pound substance weight, it was pointed out.

A substance weight of 24 pounds is permitted for 100 per cent rag content blue print papers for special order of the armed forces.



SAVE ON FIRST COST WITH READING UNIT CRANE DESIGN



Reading cranes can be fitted exactly to the requirements of the most difficult materials handling job because of the extreme flexibility of their unit design. The engineering that has gone into the simple, accessible arrangement and the interchangeable parts of the crane, eliminates the need for special design work on every job.

This means you get a crane that meets your requirements exactly without any extra design costs. You save in first cost, and you get exactly the performance needed by the job. For complete information write for "The Why and How of Faster Production."

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READING CHAIN & BLOCK CORP. 2113 ADAMS ST., READING, PA.

THE Uniformity OF RAYCO LINTER COTTON Cuts Your Costs!

A MAJOR advantage in using RAYCO Linter Cotton in paper making is the amount of time and labor that this new source of supply saves you.

RAYCO Linter Cotton is *all* cotton and *all* uniform. There are no different colors to eliminate. No adhesives, rayon or other contaminating materials to remove. RAYCO Linter Cotton saves you the whole time-consuming labor of sorting your material before charging the cooker.

Indeed, results obtained with RAYCO Linter Cotton (selected cotton linters, carefully graded by The Railway Supply & Manufacturing Co.) suggest that in addition to solving the problem of cotton fiber supply, Linter Cotton will be in *permanent peacetime* demand.

Railway Supply chemists and fiber technicians assist paper mill personnel in simplifying manufacturing procedure with the use of RAYCO Linter Cotton. We shall gladly extend this service to your plant without obligation to you.

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Plants at: FRANKLIN, OHIO • CHARLOTTE, N. C. • COVINGTON, TENN. • GREENSBORO, N. C.

Specialists in Grading, Marketing and Processing Cotton Fibers...

Pulp and Paper Industry Council to the Department of Commerce

E. W. Tinker, executive secretary of the American Paper and Pulp Association, recently announced an innovation in the way of Government-industry relationships. The first meeting of a recently organized Pulp and Paper Council to the Department of Commerce was held in Washington on Wednesday, June 28, 1944.

The Council, established at the request of the American Paper and Pulp Association, is the first of its type. Its goal is a closer relationship, a better understanding, and a sounder mechanism for cooperation between Government and business. At the first meeting, industry members of the Council expressed the view that the Department of Commerce should be, to a large extent, the representative of the viewpoint of business and the Department with which business and industry, separately or collectively, could discuss their problems and the impact of governmental policies on those problems. It is hoped through this mechanism the viewpoint of the industry with respect to its welfare, will be considered in the formulation of Government policies.

While the Council is admittedly somewhat experimental, it is hoped that out of this approach there may develop proper cooperation between industry and Government and a mutual understanding of the problems of each, to the end that the industry shall make an ever-increasing contribution to the economy of the country.

It was recognized in the discussions on June 28 that immediately the Council should obtain an understanding in the industry of governmental processes and procedures, departmental and agency jurisdictions and relationships, in order that future consultations might be held in the light of the fullest knowledge of these matters on the part of the industry and in order that matters dealt with in such consultations might result in productive cooperation and harmonization of views. To that end a subcommittee, consisting of Roy K. Ferguson, Amor Hollingsworth, J. L. Riegel, and J. D. Zink, has been appointed to participate with members designated by the Department of Commerce in such discussions.

For the purpose of formalizing channels of communication, arrangements for meetings or presentation of industry viewpoints, E. W. Tinker, Executive Secretary of the American Paper and Pulp Association, will in the main, act as a liaison for the committee. He will, on behalf of the committee, arrange for the attendance of the full membership of the committee when that seems desirable, and for the appointment of subcommittees and their attendance at meetings with respect to specific policies or industry viewpoints relating to them.

One matter that would seem to the committee to be of immediate concern to the industry relates to the possible formation of international committees or commissions for the purpose of discussing and formulating policies with respect to the broad field of post-war international trade relations.

The following were present at the first formal meeting of the Council:

For the Department of Commerce:

Wayne Chatfield Taylor, Undersecretary of Commerce (for the Secretary); Amos Taylor, Chief, Bureau of Foreign and Domestic Commerce; H. B. McCoy, Chief, Division of Industrial Economy, Bureau of Foreign and Domestic Commerce; W. LeRoy Neubrech, Chief, Pulp and Paper Unit, Bureau of Foreign and Domestic Commerce.

For the Pulp and Paper Industry:

D. K. Brown, President, American Paper and Pulp Association (Neenah Paper Company); Hugh J. Chisholm, Oxford Paper Company; R. K. Ferguson, St. Regis Paper Company; Amor Hollingsworth, Penobscot Chemical Fibre Company; Stuart E. Kay, International Paper Company (For J. H. Hinman); R. A. McDonald, Crown Zellerbach Corporation; Geo. H. Mead, Mead Corporation; Geo. Olmstead, Jr., S. D. Warren Company; Cola G. Parker, Kimberly-Clark Corporation; J. L. Riegel, Riegel Paper Corporation; R. B. Stevens, Stevens and Thompson Paper Company; Norman W. Wilson, Hammermill Paper Company; J. D. Zink, Strathmore Paper Company; E. W. Tinker, Executive Secretary, American Paper and Pulp Association.

It is hoped that out of such discussions there will grow a measure of cooperation that will be greater than anything heretofore achieved and that will be of great benefit to the country.

NOTICE

is hereby given that

The Stevens-Nelson Paper Corporation

109 East 31st Street, New York 16, N. Y.

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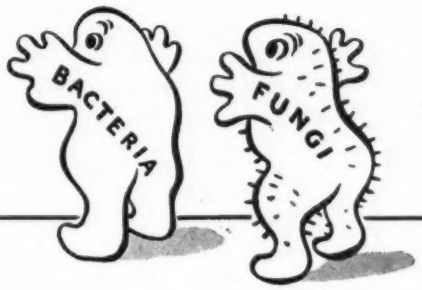
as of July 1, 1944 is appointed our sole agent in the United States for the sale of our *TROYA* and *MANAYA* Tissue, Technical and Specialty Papers.

These Papers are now in general use as successful substitutes for papers formerly imported from Japan.

John A. Manning Paper Company, Inc.

TROY, NEW YORK

STOPS IMPS THAT THREATEN YOUR PRODUCTION THIS SUMMER



Fungi and bacteria, imps that hamper important wartime pulp and paper production, are beginning their summer offensive. Why stand for the losses caused by these organisms when you can break up their attack by the application of Santobrite.

The use of Santobrite controls slime, fungi and bacteria which cause slime spots, breaks, blinded wires, plugged felts, dirty stock, clogged water lines, rotted felts and other obstacles to good mill operation.

Santobrite is economical. It is safe and easy to apply. Properly used, it gives *positive protection* against fungi and bacteria.

Complete information on Santobrite will be sent promptly upon request. The coupon is for your convenience. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri. District Offices: New York, Chicago, Boston, Detroit, Charlotte, Birmingham, Los Angeles, San Francisco, Montreal, Toronto.

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Please send me, free, a copy of your technical Bulletin O-5 "Santobrite For Microorganism Control In The Pulp and Paper Industry" and other pertinent information.

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PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Chicago Professional Paper Group—First Monday of each month except July and August at Chicago, Ill.

MORE PULPWOOD NEEDED

Although receipts of pulpwood are rising more wood is required. Pulpwood receipts at the pulp mills have been increasing for some weeks and the total for the first four months is larger than was anticipated. The plotted trend of pulpwood output has been downward since March, inventories have been downward since the middle of May and consumption began to decline in April. In the latter part of May, the Department of Commerce reports, "The entire economy of the domestic pulp and paper industry was seriously threatened by the spreading strike conditions in the Pacific Northwest. Fortunately, the labor uprisings have tentatively but only partly subsided, pending a rehearing by the War Labor Board. Should the West Coast mills be put out of production, the critically important grades of dissolving pulp would have to be manufactured by mills in other regions and, in particular, an acute situation would develop with respect to market pulp normally produced on the West Coast."

Total pulpwood receipts reported by the Forest Products Bureau, War Production Board, for the first four months of 1944 are as follows: domestic 4,997,000 cords, compared with 4,022,000 cords for the same period in 1943, or an increase of 24.2%. Imported pulpwood aggregated 492,000 cords for the first four current months, compared with 447,000 cords for the like period in 1943, or an increase of 10.0%. In the first four months of the current year, the South produced 2,016,000 cords or 3.9% more than in the like period in 1943; the Northeast produced 943,000 cords or 3.8% more; the Lake States, 1,244,000 cords or 93.7% more; the Pacific Northwest, 800,000 cords or 28.6% more, and the Appalachian Region supplied 486,000 cords or 36.1% more in the first four months of 1944 over the same period in 1943. Total consumption in the first four months of 1944 was 5,226,000 cords, compared with 5,059,000 cords in 1943, or an increase of 3.3%. Inventories aggregated 3,028,000 cords in 1944, compared with 2,736,000 cords in 1943, an increase this year of 10.6%.

Manpower continues to be the most important factor, the Department of Commerce states in its Industry Report for June. The New Selective Service determent policies regarding woods' workers, are of great importance, and should provide considerable aid in meeting the Nation's critical lumber, pulpwood and other forest products needs. Wood workers, both full-time and part-time, are still recognized as engaged in essential activities under revised Selective Service policy. Full-time woods' workers are listed by the Selective Service System as being engaged in one of the essential activities in which registrants are entitled to consideration for occupational deferment. Part-time logging workers, whether engaged on their own premises or on other logging operations, are likewise eligible for consideration for continued deferment if they are otherwise normally engaged in an essential activity warranting their deferment. Under current Selective Service policies, farmers or other agricultural workers devoting their off-season time to activities vital to war production or in support of the national health or safety of our country, may seek, through local boards, continuation of their agricultural deferment status.

In commenting on the latest pulpwood receipts figures, the Forest Products Bureau states that, "Although receipts in April were higher than a year ago, it should be realized that they were abnormally low in 1943. . . . It must also be taken into consideration that because of lowered inventories, the mills in the northeast are being forced to get in, as fast as possible, the wood cut in the rough wood season. The pulpwood supply picture in this region is extremely critical, domestic April receipts being 65,000 cords less than they were in March. Pending future developments, the present outlook for the eastern region for months ahead and the first part of 1945 is not very favorable. . . . Throughout the country as a whole, there are now 72 prisoner of war camps established entirely for pulpwood cutting. Of this number, 15 are located in the North and 57 in the South. There has been no general increase in the use of prisoners during May, the number cutting pulpwood remaining nearly static at 7,000, but 3,000 additional war prisoners already have been allocated to camps in the process of construction and 2,000 war prisoners were allocated to camps to be constructed. As the farming season progresses and harvesting time approaches, it is quite possible that few, if any, additional prisoners of war will be released for pulpwood cutting. The needs of agriculture will undoubtedly be very heavy, so heavy in fact, that prisoners of war cutting pulpwood may be transferred to agricultural work. . . . More than 1,000 workers from British Honduras will be brought to the United States by the War Manpower Commission to meet the serious labor shortage in the logging and lumbering industry."

To meet the serious labor shortage, pulp manufacturers are urged to mechanize their woods operations wherever possible. The mechanical equipment situa-

tion is critical and it is necessary to file applications for needed equipment immediately with the Pulpwood Production Branch, Paper Division, Forest Products Bureau, War Production Board, Washington, D. C. In order to receive mechanical equipment, WPB authorization to purchase and place orders for such equipment must be obtained in advance. Because of the shortage of equipment, applications should represent the absolute minimum equipment necessary for securing maximum utilization of woods labor to maintain capacity pulpwood production.

Pulp Wood Products Incorporates

Contemplating the salvaging of timber on logged-over land, Vancouver, B. C., interests have incorporated Pulp Wood Products, Ltd., with $100,000 capital.

A central camp at Nanaimo and portable operations in logging shows on Vancouver Island are planned.

The program includes saw equipment and conveyors sufficiently small to be carried to logging operations on logging trucks. Here small dimension timber and snags left by high-lead logging will be cut to cordwood lengths and transported to the central plant.

There it will be sorted and chipping equipment will turn out raw materials for distribution to pulp mills.

Similar operations on an experimental basis by the Provincial Government, Comex Logging Company and Powell River Company are reaching a new stage. Based on logging lands near Ladysmith, its logs have been boomed and an experimental plant will go into operation this week or next at Powell River to handle the logs.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1944		Corresponding Weeks—1943	
May 27	91.7	May 29	91.8
June 3	88.3	June 5	84.7
June 10	91.5	June 12	88.0
June 17	92.8	June 19	87.0
June 24	92.4	June 26	87.0
July 1	92.4	July 3	77.4

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1943	87.2	88.9	89.5	88.7	91.4	84.8	84.3	91.0	88.3	89.6	89.6	82.0	87.8
1944	89.6	89.6	90.1	89.5	90.9	*92.6*							

COMPARATIVE YEARLY SUMMARIES

	1937	1938	1939	1940	1941	1942	1943	1944
Year to Date	88.8	67.4	79.5	87.2	92.7	97.9	88.3	*90.5*
Year Average	79.8	71.5	83.4	85.6	97.4	90.4	87.8	

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1938	56	63	63	60	60	59	59	69	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	83	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	94	94	93	87	93
1944	90	96	95	96	96	96							

Week ending May 27, 1944—96
Week ending June 3, 1944—93
Week ending June 10, 1944—96
Week ending June 17, 1944—95
Week ending June 24, 1944—96
Week ending July 1, 1944—*95*

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

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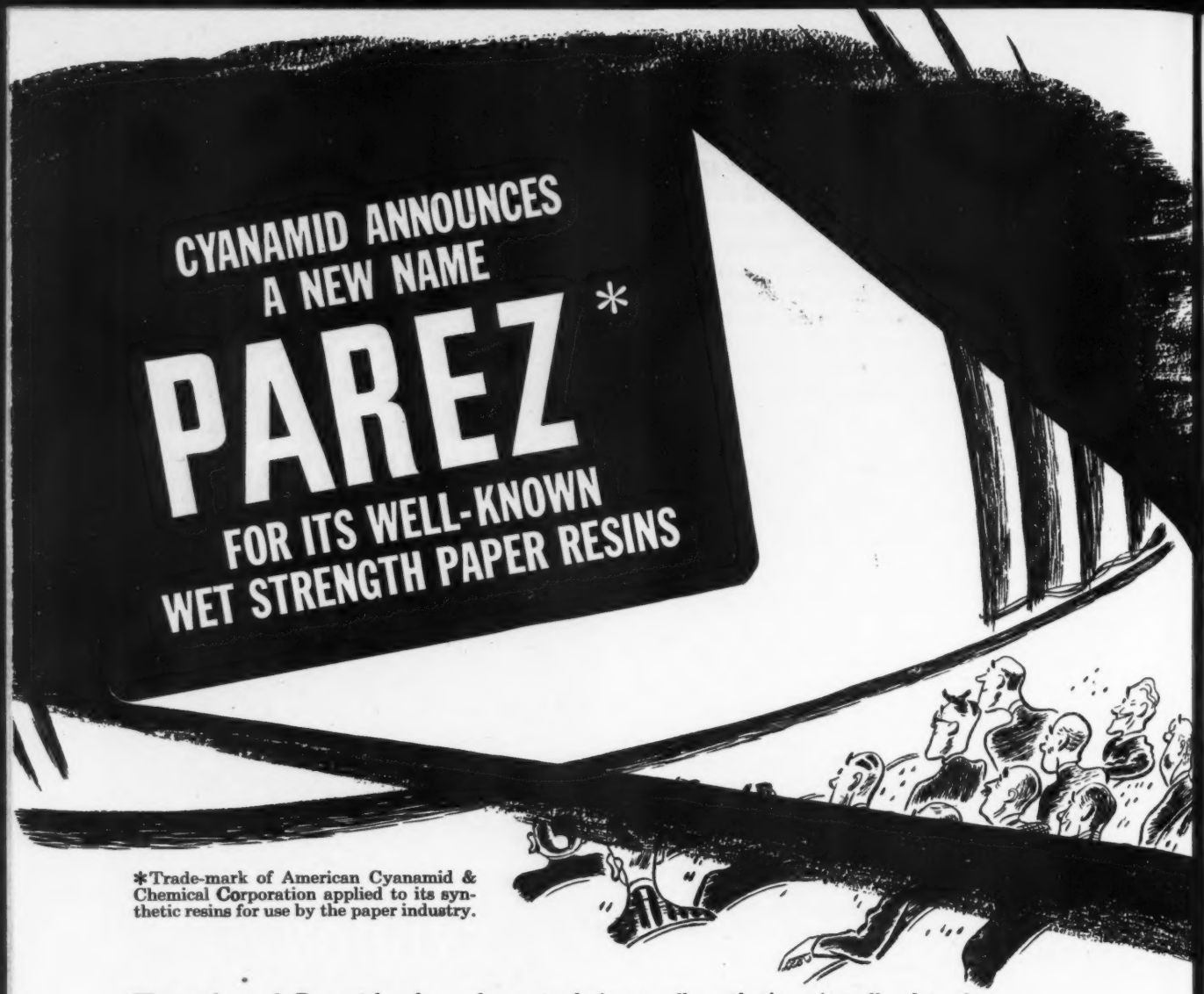


*Trade-mark of American Cyanamid & Chemical Corporation applied to its synthetic resins for use by the paper industry.

The trade-mark PAREZ* has been chosen to designate all synthetic resins offered to the Paper Industry by the American Cyanamid & Chemical Corporation. This family of products includes our well-known wet strength resin derived from melamine. This same resin will henceforth be known as PAREZ 607.

Paper that is tough when either wet or dry, made possible by PAREZ 607, has become an important factor in the war effort. Some of the military uses outlined below may suggest a potential postwar product development to you.

MAPS printed on the new wet strength paper have been adopted as standard by many agencies making war maps. Their strength is retained even after being soaked with water or oil, or trampled in the mud, and then washed with soap and water or dipped in gasoline. They have satisfactory writing and erasing qualities even when wet.

WET STRENGTH PAPER FOR CLEANING MACHINERY is being used by the armed forces to extend the limited supply of rags.

WET STRENGTH PAPER FOR POLISHING LENSES of military optical instruments has proved valuable where ordinary papers might leave fibers that would interfere with clear vision.

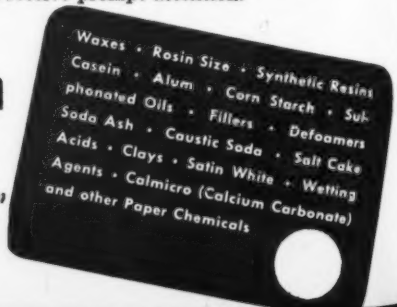
PAPER BAGS, WATERPROOFED AND WET-STRENGTH TREATED, are in service which may be immersed in water or exposed to rain for extended periods of time and still protect vitally needed supplies being shipped to all parts of the globe.

WET STRENGTH BLUEPRINT AND PHOTOGRAPHIC PAPERS that are to be treated with sensitizing solutions are made more serviceable by application of wet strength resins.

FOOD PACKAGES of wet strength paper provide additional protection for moist foods such as meat.

WET STRENGTH TAGS on material and equipment going to our armed forces hold together even when exposed to water, expediting shipment and identification.

From these examples it is easy to see how paper treated with PAREZ will have many new fields of usefulness where wet strength is of importance. Your inquiry on present or postwar use of PAREZ will receive prompt attention.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Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Use of the Dry Indicator Method for Testing the Water Resistance of Asphalted Papers*

By E. G. Mullen[1]

Abstract

An accelerated dry indicator test for determining the transudation rate of asphalted papers is proposed. The testing water is maintained at 100° F.

Curves and data showing the relation between transudation time and the water temperature on a representative group of asphalted paper are presented.

Federal Specifications and certain other specifications issued by the Armed Services have, as one of their requirements, definite water permeability values as determined by "The Dry Indicator Test," TAPPI Standard T 433 m-41 *(1)*. Many asphalted papers have such a high degree of resistance that the color change in the dry indicator powder is very gradual and, as such, presents a definite problem in reading the correct end point.

Codwise *(2)* has shown that it is entirely practical to determine the degree of sizing of paper and paperboard at high temperatures up to the boiling point of water by the flotation method.

A standard test is being used, a modification of the TAPPI standard by using water at 100° F. This paper will present data showing the relation between the transudation time of asphalted paper and the temperature of the water. It will also present the modified dry indicator test as a more rapid and accurate means of determining the water permeability rate of asphalted papers.

Description of Method

Samples cut 3 by 3 inches were conditioned for testing according to the TAPPI Standard T 402-m. The edges of the samples were sealed to prevent water from entering through the edges and reaching the indicator without going entirely through the material by dipping in a mixture of melted beeswax and rosin. It is often necessary to duplicate the dipping operation to eliminate a wicking action as may occur with sisal, jute, or cotton reinforcing. On quadruplex types and on heavy asphalted boards it is important that an unbroken film protect the edges of the specimen.

The indicator powder is sprinkled on the specimen in a thin, even layer and care must be taken to avoid bunching or piling of the powder as this seriously affects the transudation time. Seal a 2-inch watch glass over the indicator powder with the melted beeswax-rosin, using a pipet or medicine dropper. The specimen is carefully placed on the testing water. Extreme care must be exercised to avoid trapping air bubbles that might cause uneven wetting of the specimen. In the case of crepe combinations and other products having uneven surfaces, it is first necessary to wet the surface using a soft brush.

The transudation time is recorded as the point where there is an easily perceptible color change over the entire area of the specimen.

Types of Material Tested

In the first study to show the correlation between transudation time and temperature, two types of asphalted papers were selected.

Type C—an asphalt duplex paper similar to the trade 30-30-30 grade and Type E-1—an asphalt reenforced duplex.

A representative number of asphalted products, as they appear in Federal Specification UU-P-271a were selected and an attempt was made to apply the correlation factor derived from the first study. In defining and describing these products the same terminology as appears in the specification was used. These are all papers of different characteristics and consist of the following:

Type B-2	A duplex creped in both directions or creped in one direction and pleated or corrugated in the other direction.
Type C	A duplex uncreped.
Type D-1	A duplex reenforced in one direction uncreped.
Type E-1	A duplex reenforced in any two directions uncreped.
Type K-1	A single sheet uncreped, coated, saturated or infused with asphalt.
Type L-2	A duplex uncreped, one sheet coated, saturated or infused with asphalt.
Type L-3	A duplex creped, one sheet coated, saturated or infused with asphalt.
Type M	A triplex uncreped.

Eight tests were made on each type of material —four on one side and four on the other.

Discussion

Figure 1 shows the relation between the transudation time and the temperature of the testing water. It is interesting to note that although the transudation time of Type C is greater than Type E-1 yet the general slope of the curves is the same. This sub-

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

[1] Member TAPPI; Research Department, American Reenforced Paper Co., Attleboro, Mass.

stantiates the data of other works and seems to prove a distinct relationship between the permeability rate of asphalted papers and the temperature of the testing water. It also reveals that in both cases the rate of permeability at 100° F. is approximately five times as great as at 73° F. Thus it suggests that the rate of transfer as determined by the dry indicator test is proportionate to the vapor pressure as it is applied to asphalted papers.

Table I shows a brief description of the papers of different character selected to demonstrate further the relation between tests conducted with the testing water at 73° F. and at 100° F. and to show this permeability relationship to be approximately 5 to 1.

TABLE I

Type	Description	100° F. Value hr.	73° F. Value hr.	100° F. Value × 5 hr.
B-2	Duplex creped	3.5	18	17.5
C	Duplex flat	5.5	26	27.5
D-1	Duplex reenforced	5	24	25
E-1	Duplex reenforced	6	29	30
K-1	Single sheet coated	2.25	11	11.25
L-2	Black & Tan duplex	8.5	44	42.5
L-3	Black & Tan creped	5	23	25
M	Triplex	9	47	45

The values obtained at both temperatures were tested and this factor applied to the 100° F. values. There is exceptionally good agreement. It should be stated that the average agreement derived from eight tests is better on the whole than is the individual sample agreement.

Application

The ability to conduct approximately five times the number of tests (in the same space and time) as would be possible at 73° F. is of considerable importance in routine evaluation of products for the control of production quality. For instance, by this modified test it becomes far less burdensome to analyze materials for variance and to establish good estimates of average quality and standard deviation, providing a sound basis for adequate sampling of daily production, free from the inaccuracies often arising when a somewhat tedious and long term test method must, of necessity, limit the volume of daily control work.

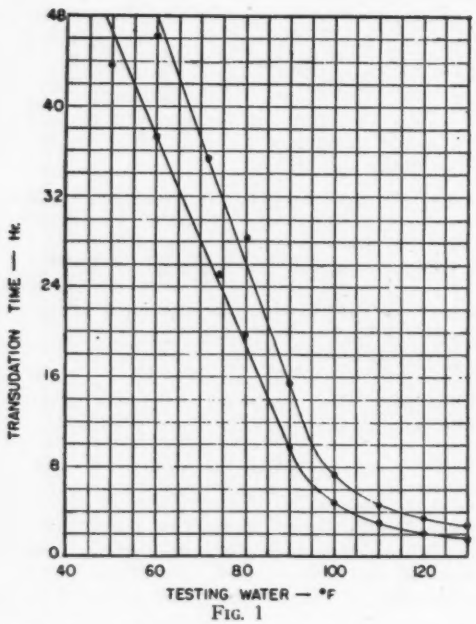

FIG. 1

Another feature of the accelerated test is that, in the great majority of instances, accurate end points can develop and be read during a normal working day, making it possible for one trained operator to complete the entire study. The end point is more accurate because the color change is less gradual and, thus, far more distinct.

Conclusions

1. It is possible to accelerate the dry indicator test for determining the water resistance of asphalted papers.
2. The rate of transudation at 100° F. is approximately five times greater than at 73° F.
3. The accelerated test more readily lends itself to routine control checking.
4. The end points are more distinct due to this more rapid rate of transudation.

Acknowledgment

We wish to express our appreciation of the assistance given by Mr. J. P. Sherman and Mr. Myron I. Holt in compiling and analyzing the data used in this paper.

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TAPPI Notes

T. J. Carlin, formerly superintendent of Southern Advance Bag and Paper Company, is now mill manager of the Northern Kraft Corp., Howland, Maine.

N. Wilson Cady, formerly production engineer for the U. S. Gypsum Company, is now works manager of the Oakmont, Pa. Div. of the same company.

Henry M. Hunter, formerly vice president of the Goslin-Birmingham Manufacturing Company, is now Eastern sales manager for the General American Process Equipment Co., 420 Lexington avenue, New York, N. Y.

Vincent J. Mohan, formerly of the Brooklyn Varnish Company, is now research chemist for the F. H. Levey Company, 222 44th street, Brooklyn, N. Y.

Alfred H. Nadelman, formerly of the Glassine Paper Company, is now a member of the technical staff of the International Paper Company, Niagara Falls, N. Y.

D. S. Chamberlain is now vice president of the Warwick Chemical Company, West Warwick, R. I.

The Lobdell Company, Wilmington, Del. is now a sustaining member of the Technical Association. H. L. Seaman is president of the company, Harrison J. Farra is chief engineer and Linwood W. Elliott is papermill service engineer. The management of the company has been in the hands of the Lobdell family since 1867. It is the outgrowth of a foundry established in 1830 by Jonathan Bonney. The Lobdell Company manufactures chilled iron rolls, machine calender stacks, roll grinding machines and roll calipers.

As a result of the ballots recently sent to members of the Technical Association it was almost unanimously voted to cancel any plans to hold a fall meeting of the Association this fall. This is in accordance with the request of the Office of Defense Transportation who requested that all conventions be cancelled. The local sections will continue to hold meetings beginning next fall and most of the TAPPI committees will hold business meetings to carry on the important work of the association.

Stock Preparation at J. R. Booth Limited*

By R. F. Vokes[1]

Abstract

A stock preparation system is described as it evolved from the combined engineering efforts of the paper mill staff and the equipment manufacturer.

The type and arrangement of equipment is designed for batch operation handling air dry pulps and machine broke for three paper machines producing a wide variety of basis weights and grades of paper. Centralized remote control of the entire system is geared with a high degree of technical control of the pulp strength development and the operation is thereby carried out to satisfy a particular set of refining principles established as a prerequisite for successful operation.

Alternate methods of applying this type of system to other physical conditions existing in a mill are described, and the post war developments expected from research work now in progress to improve this system are indicated.

The J. R. Booth Ltd. stock preparation system has already come to the attention of many papermakers both in Canada *(1)* and in the United States *(2)* as a pre-war development which has established a working basis for post-war installations. Because of the successful nature of this development, it is presented again for the consideration of those who wish to attain a measure of coordination between the fast developing scientific approach to paper manufacture and the well established artistic methods.

The history of the development of this system would not be uncommon to the situation facing many mills today wherein the following requirements are to be met:

1. A better quality, 2. a greater uniformity, 3. a greater cleanliness, and 4. a lower cost.

It was necessary for the Booth engineers to employ the existing space requirements of six Hollander beaters, sufficient only to serve one paper machine, and extend the equipment to furnish three paper machines for the production of high class specialty papers if they were to meet these requirements. Horizontal extension of the beater room was impossible but an upper floor level and a basement could be made available for the equipment to be used.

The J. R. Booth engineering production and control staff called in the engineers of the Dilts Machine Works and their Canadian associates, Alexander Fleck Ltd. for consultation on the use of Hydrafiners. Through cooperative effort, an installation was made employing beaters as cycling chests, from which subsequently evolved a new design of cycling chest *(3)* particularly adapted to the physical conditions of the plant as well as the nonselective theory of refining described below.

Coincident to the work in progress at J. R. Booth Ltd., the Dilts Machine Works produced the Hydrapulper which complemented the system perfectly and forms an integral part of it as shown in Fig. 1. The system as shown serves two paper machines, and there is still sufficient room in the plant for a third system with space left over for other uses.

[1] Member TAPPI; Dilts Machine Works, Div. The Black-Clawson Co., Inc., Fulton, N. Y.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

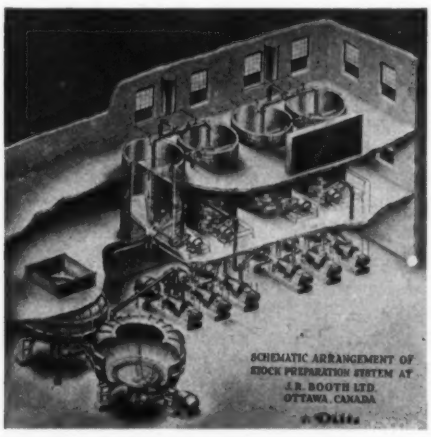

FIG. 1

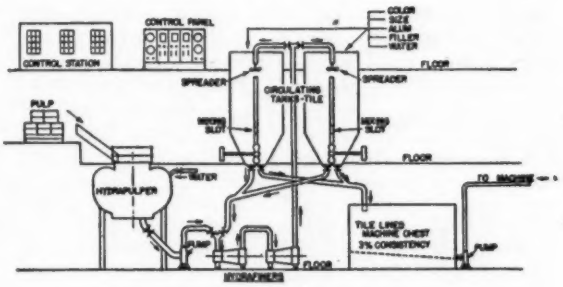

FIG. 2
Stock Flow Through System

Description of System

Figures 1 and 2 serve to illustrate how the system was installed. The synthetic protograph shows an isometric view of the actual arrangement while Figure 2 is a diagrammatic sketch explaining the stock flow through the system.

The installation consists of a 2000 pound air dry batch system for each paper machine capable of preparing up to 55 tons of stock per day for grades such as kraft which require considerable treatment. Two pulpers, two pumps, six refiners, four cycling chests, and four agitators comprise the system from which point the prepared stock is dumped by gravity to the machine chest and thence jordaned on to the paper machine continuously. Two cycling chests serve one group of two, three, or four refiners depending upon the requirements of the pulps and the entire operation is controlled at three points for uniformity as follows:

1. Pulp laboratory: Analysis of pulps and routine testing of slush stock in system.
2. Pulper: Furnish proportioning by weight and volume.
3. Control panel: Automatic remote manipulation of valves regulating stock flow and plug adjustment of the refiners regulating power input (see Fig. 4).

Figure 3 depicts the five stages in the operation of the system, all of which can be carried on simultaneously and independently considering the number of units installed. The piping is so arranged that a failure at any point in the system will not completely incapacitate the operation.

Each paper machine unit system employs one pulper, two or more refiners in series and two circulating tanks. Each batch is furnished to the pulper, slushed down, and pumped through the refiners to the cycling tank. At this point the refining cycle begins (3rd stage) and meanwhile the fourth, fifth, and first stages are completed in conjunction with the other cycling or circulating tank. Thus, the equipment can be operated practically continuously as the tanks are used alternately from batch to batch.

Interesting and significant features of the operation involve such things as the pumping of the treated stock through the refiners in series en route to the cycling chests. This was incorporated for two reasons, first, so that all the fibers would have been subjected to refining action before entering the papermaking system, and second, so that fiber separation of broke would be completed before entering the cycling chests, which is of great advantage when disposing of broke towards the end of a run.

In the second and third stages of operation the circulating tank agitator is at rest. At this point a major design feature of the tanks as well as the stock driven spreader (Fig. 2) aids in the performance of the function of stratification. *(3)* This principle was introduced by J. R. Booth, Ltd. to conform with the theory of refining wherein all the fibers are subjected to an equal amount of work. They believe that uniform treatment of all fibers is a prerequisite for making a uniform sheet of paper and have demonstrated a successful application of this principle. The integration of pulping with stratification-cycling and completely mixing a known quantity of fiber, at a known consistency, for a known period of time in a treatment consuming a known quantity of power, has culminated in a 'time-power' cycle which can be governed and duplicated.

A most unique feature shown in Fig. 4 is known as the control panel, from which point within a radius of 6 feet the operator can manipulate automatically all valves, motors, and refiner plug settings and thereby control the entire operation except pulping. Before him is recorded the consistency, chest levels, power consumption, production rates, etc. He has no heavy work to do except to concentrate mentally on his job of producing stock of uniform quality. He has the tools for detecting any irregularities at the earliest possible moment and can correct the conditions before the stock can get to the paper machine.

Another distinct features of the operation involves the fourth stage, Fig. 3, at which point the measured chemicals and dilution water are added to bring the consistency to 3% and the entire batch is thoroughly mixed by the agitator and mixing slots. Here again the operation is controlled carefully and the effects of the chemicals on the strength properties of the pulp taken into consideration. Dumping of these tanks is rapid and complete which obviates the need for rinsing out dead stock which would upset consistency control. Washing down after color changes is a very simple matter since all parts of the tank are readily accessible and visible from the top.

As indicated above, the control features of the J. R.

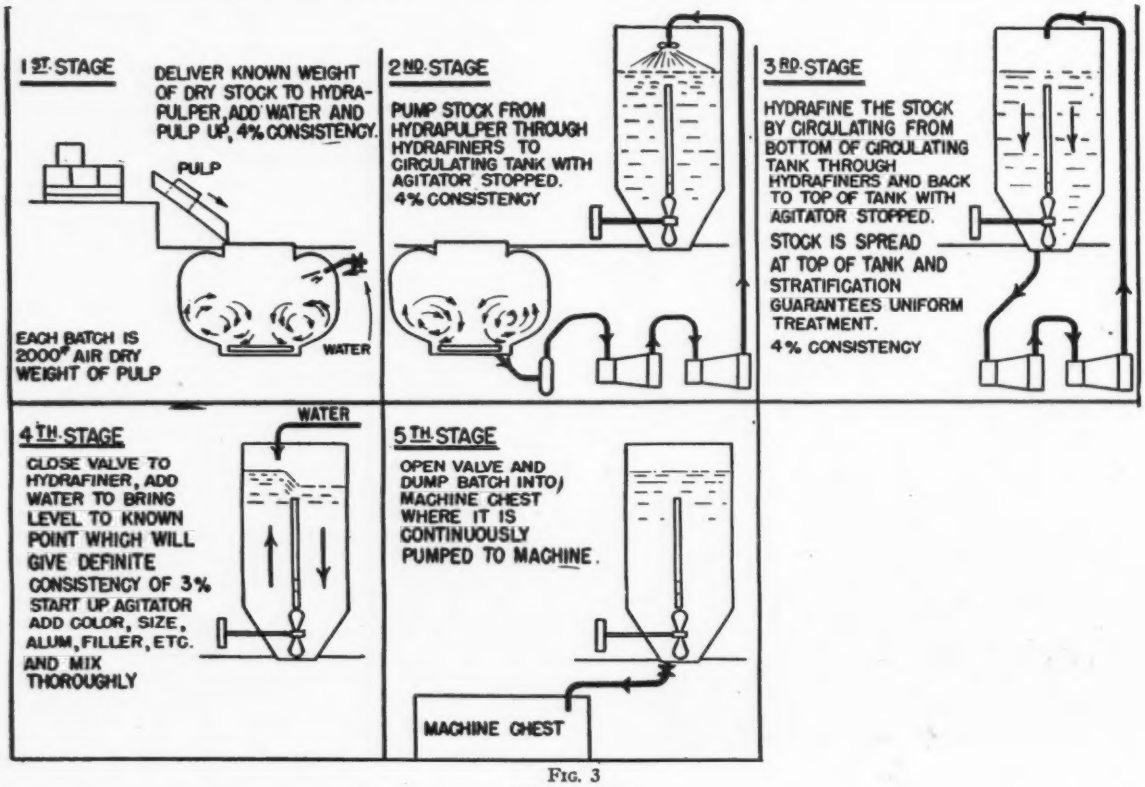
1ST STAGE
DELIVER KNOWN WEIGHT OF DRY STOCK TO HYDRAPULPER, ADD WATER AND PULP UP, 4% CONSISTENCY.
PULP
WATER
EACH BATCH IS 2000# AIR DRY WEIGHT OF PULP
2ND STAGE
PUMP STOCK FROM HYDRAPULPER THROUGH HYDRAFINERS TO CIRCULATING TANK WITH AGITATOR STOPPED. 4% CONSISTENCY
3RD STAGE
HYDRAFINE THE STOCK BY CIRCULATING FROM BOTTOM OF CIRCULATING TANK THROUGH HYDRAFINERS AND BACK TO TOP OF TANK WITH AGITATOR STOPPED.
STOCK IS SPREAD AT TOP OF TANK AND STRATIFICATION GUARANTEES UNIFORM TREATMENT.
4% CONSISTENCY
WATER
4TH STAGE
CLOSE VALVE TO HYDRAFINER, ADD WATER TO BRING LEVEL TO KNOWN POINT WHICH WILL GIVE DEFINITE CONSISTENCY OF 3%
START UP AGITATOR
ADD COLOR, SIZE, ALUM, FILLER, ETC. AND MIX THOROUGHLY
5TH STAGE
OPEN VALVE AND DUMP BATCH INTO MACHINE CHEST WHERE IT IS CONTINUOUSLY PUMPED TO MACHINE.
MACHINE CHEST

FIG. 3
Operation Stages

Booth system contribute in a large measure to the success of the endeavor. Booth's engineers very carefully analyzed each step taken in the development from the standpoint of being able to measure and regulate as many of the variables as possible. Consequently, elaborate and extremely efficient technical control facilities were incorporated together with a complete file of operation records and standards.

Technical control is exercised throughout the complete manufacturing process as follows:

1. Quality analysis of raw materials.
2. Quantitative proportioning of furnishes.
3. Routine testing of slush stock in process.
4. Continuous regulation and recording of refining and jordan operating conditions.
5. Finished sheet analysis.

From the above set of records has evolved a set of standards which outline in detail the exact raw material properties and methods to be employed in making any specific type of paper. When a new type of paper is to be made, a set of temporary standards is employed as indicated by experience on other grades. The control method is a smoothly functioning adjunct to the paper making process and is employed according to the following procedure:

1. Incoming pulps are marked with a serial number and standard quality tests are made on each type to establish its strength characteristics.

2. When an order is to be made, the "stock preparation standard equipment" sheet is sent to the stock preparation room together with a "standard color" sample. A duplicate copy is sent to the control station.

3. The foreman decides which pulps are to be used from the "pulp quality report" and either employs the standard instruction for treatment or alters the procedure slightly depending upon the hardness or softness of the pulps.

4. After refining is apparently complete, the batch is held in the cycling tank until a tester can complete his analysis for consistency, freeness, bursting strength, and tear. If standards are attained the operator is permitted to drop the batch to the machine chest. Otherwise refining may be extended until standards are met.

5. Step 4 is repeated for about three batches after which time the stock is usually on the machine and the dry end tests are being made. If dry end standards have been met, the stock preparation control is reduced to determining consistency and freeness only. The freeness standard for the run may be altered slightly should the dry end testing demand it.

The four objectives previously listed have been attained but there have been additional advantages developed which are as follows:

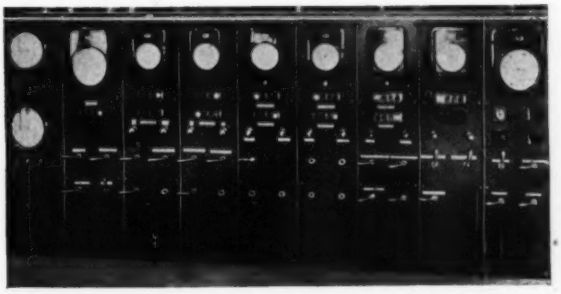

FIG. 4
Control Panel Installation

Saving of time.
Saving of floor space.
Increased physical paper strength.
Improved formation.
Improved drying with less cockling and curl.
Improved uniformity.
Improved control.
Greater cleanliness.
Less physical effort.
Less difficulty from broke.
Greater economy of furnish.
Improved reproduction, run to run.
Greater confidence in the ability to make a good sheet of paper and continue to make it.

In addition to the above progress, it is pertinent to mention that the selection of equipment for this development was based upon well established theory and field operating data furnished by the equipment manufacturers.

The culmination of nearly a century of service to the pulp and paper industry and the emphasis upon research and development work produced the most revolutionary and successful piece of stock preparation equipment. The J. R. Booth papermakers were among the first to recognize this pulping unit as a must from which they would gain unlimited advantages. To quote Mr. Frank S. MacDonald, Production Manager, J. R. Booth, Ltd., "The Hydrapulper was installed because of its modern design, ruggedness, nonclogging and easy cleaning features, speed of pulping and its ability to handle broke quickly with a minimum of damage to the fiber and less subsequent upset to paper uniformity than is usually associated with beater broke. The Hydrapulper, because of its pulping speed, also allows broke to be used in the furnish until the run is practically complete, and greatly minimizes the broke disposal and storage problem."

In connection with the selection of the refiner, here again the needs and aspirations of progressive papermakers were taken into account. It is not therefore surprising that Mr. MacDonald comments, "As a stock-treating medium the Hydrafiner was found to be a modern machine, built and operated within limits of precision which are seldom found in stock preparation equipment. In particular we were interested in trying to get equipment which would be able to develop the greatest worth from the potential value of the fiber being used. Since we found the Hydrafiner did a maximum of brushing and a partial splitting with a minimum of cutting and shortening, it appeared to suit our needs in this respect. There was still another reason for adopting these machines. On account of precision manufacture, exactness of setting, coupled with controllable power input, we felt we had a machine which would allow us to duplicate our treatment from batch to batch and run to run with a high degree of accuracy."

In Figs. 5, 6 and 7 are shown virgin, beaten and processed kraft fibers respectively, magnified 250 diameters. The comparison between the beaten stock and the fibers processed by the refining equipment is obvious evidence of a new type of treatment which is largely a partial splitting and flattening action rather than a brooming and bruising action evident in the beater prepared stock. Interpreting this evidence in terms of control testing and operating data, Booth's technicians have confirmed the fact that the fibers are longer and stronger, require less jordaning, and therefore may be formed up at a higher freeness at the machine. Consequently, a greater bursting strength at a higher tearing strength is obtained and the paper machines have been run faster with less drying capacity per pound of fiber than was possible

with beater prepared stocks. The exact technical data manifesting these claims is a matter of record with the J. R. Booth Company and may be analyzed and reported at a subsequent date.

Booth's chemists have hypothesized further in an attempt to explain the refining action and why it is different from that of a beater or a jordan. Their theory is "that the principal part of the action is due to one fiber being rubbed against another fiber." The theory is advanced that "the fillings have very little to do with the actual effect on any particu'ar fiber and that they act largely as a friction medium causing the fibers to be rolled around and rubbed together within a confined space." "There is no metal-to-metal contact while stock is passing through normally," and in fact "the bars (of cast plug and shell liners) were actually wider after service than they had been when installed and were of about the same shape in cross-section, as (if) they had been hammered down on the circumferential face."

In the latter instance, the tendency of the bars to 'mushroom' has been found to depend to some extent upon the structural materials of the liner castings and can therefore be controlled.

"Fiber selection" is described as "the most universal deficiency in stock preparation machines." It means that "all fibers do not get uniform treatment, some get too much and many none at all." In order to establish that all fibers were treated uniformly and that very little stock passed through the slots between the bars of the unit, a special experiment was performed on the defibering of broke. Briefly described, a batch of broke was defibered in a beater which took 1.5 hours after the roll was lowered to the bed plate. Another batch of broke was passed through the refiner from one beater to another which took only 3 minutes to obtain the same results. Hence, Booth's technicians concluded, "We had found out how to despeck the stock thirty times as fast as our original test and (we determined) how to get more uniform treatment of all fibers."

Notwithstanding the above results, the spirit that has generated this revolutionary development in stock preparation history continues to drive its originators to ever greater achievements. We must therefore record herebelow an indication of the results of research work designed to increase the multiple, advantages and improvements already attained. We quote the modest comment of Mr. MacDonald as follows: "In spite of the progress made, we are quite humble in admitting that we are not always able to make as uniform paper as we would like to, and we will have to travel the road to better papermaking for a long time yet before we can demonstrate that we have transformed the art into anything like an exact science."

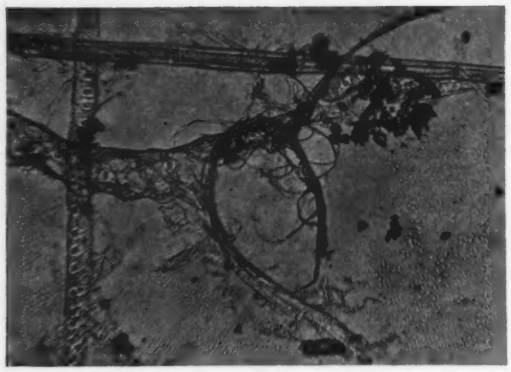

FIG. 6
Beaten Kraft Fiber

Post-War Adaptations and Developments

There are in existence alternate methods of employing some of the features of the J. R. Booth stock preparation system which are ready for post-war application. For example, a horizontal cycling chest may be employed and the pulper can be dumped by gravity through the refiner and into the chest. The chest may be emptied through a centrifugal pump type agitator after the chemicals are mixed and, of course, the same type of technical and remote mechanical control features can be adopted.

Research work now in progress at the J. R. Booth plant, in connection with the operation of the refiners, portends a future full of additional knowledge which tends to aid in the fulfillment of the ambitions of the originators "to transform the art of paper making to an exact science." Although almost anything may result from research efforts, it is fairly accurate to report that no fundamental changes in the theory of operation can be expected, but instead, an increase in the efficiency of the operation of the equipment may result in a further horse power economy.

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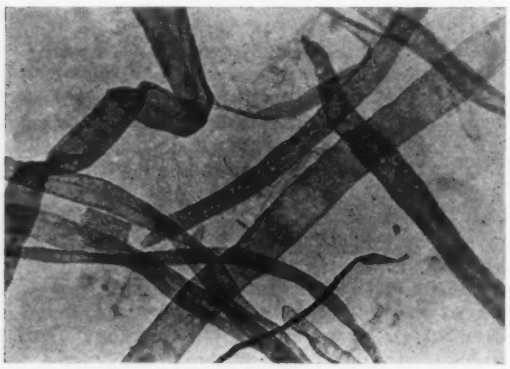

FIG. 5
Virgin Kraft Fiber

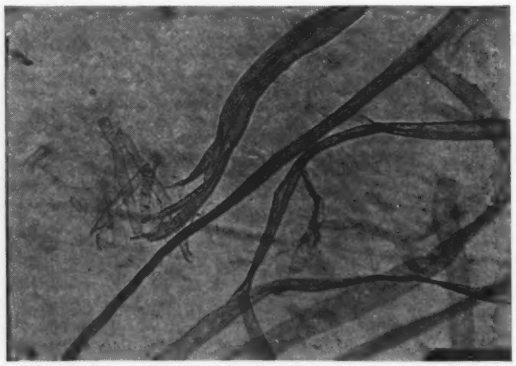

FIG. 7
Processed Kraft Fiber

Post-War Planning of Paper Mill Steam Plants*

By E. F. Burns[1]

Abstract

In 1942 Engineering Project No. 174 was undertaken with the idea that information would be formulated governing the choice of fuels for use in paper mill power plants. The subject was to be considered from the standpoint of geographical location, most economical fuel to use in each location, and plant changes necessary to obtain the ultimate in low cost steam production.

Later it was found, because of war conditions, that the project as originally contemplated could not be carried on immediately, and for that reason an immediate study was made of fuel transportation, storage problems, and ideas for assisting the plants to secure the greatest operating value from the fuels obtainable.

This paper deals with the fuel situation broken down into sub-headings: oil, coal-oil mixtures, and solid fuels. It points out that oil will undoubtedly continue to be very scarce during the post-war period, with possibly some government regulation prohibiting the promiscuous use of oil for fuel; oil-coal mixtures are apparently a stop-gap, and solid fuels will constitute the main source of heat energy after the war.

Suggestions are presented dealing with the revamping of present power plants and also points on how the fuel situation may effect the post-war planning of new plants.

On August 2nd, 1943—TAPPI Special Report No.332 , "Fuels and their Application" *(1)*, was distributed to all members who had submitted data in response to the questionnaire with respect to Engineering Project No. 174.

This special report contains a tabulation of Power Plant data from 126 mills and also most of the paper "Fuel Problems in War Time" *(2)* by the author presented at the Fall Meeting of TAPPI in Boston in the fall of 1942.

A review of this paper will indicate that the primary object of the study of fuels as undertaken by the Heat and Power Committee in late 1941 and early 1942 was to indicate ways and means toward lower steam plant generating costs by considering

1—The geographical location of the plant in relation to fuel source.
2—The most economical fuel to use in each location.
3—Changes in plant equipment necessary to obtain the ultimate in low cost steam production.

War Suddenly Enters the Picture

Then suddenly the country was at war and the mills were faced with fuel problems somewhat different from those which were to receive the original consideration of the committee.

Transportation problems increased making necessary, where practicable, larger storage piles with increased spontaneous heating problems and revamped handling methods. It was no longer possible to fit the proper fuel to the plant. The plants were required to take those fuels which were available, and it is believed experience is quite general that fuel quality has dropped in a very noticeable measure.

As to plant equipment changes, no changes have been permitted except with high government priorities which, in most cases, paper manufacturers have been unable to obtain. Some conversions from oil to coal have been required by the Petroleum Administration for war.

Therefore, with the country at war the study was altered to consider (1) transportation, (2) storage, and (3) making the most of what could be obtained.

Unknown Factors

The Nation is still at war. How long the war will last is not known. Neither is it known when restrictions will be removed from the purchase and installation of power plant equipment nor what economic conditions will prevail after the war.

There seems to be a general feeling that the country is over the production hump and more and more is heard of cancellations of various large orders and contracts. The manpower situation, however, is one very difficult of analysis.

Due to the present uncertainties, it is not feasible to conduct a further study of geographical locations in relation to fuel sources or to study the most economical fuel to use in a certain locality, until it is known which fuels will be available after the war.

Therefore, this paper will discuss (1) The fuel situation, (2) Revamping of present plants, and (3) new plants.

The Fuel Situation

Oil

First is considered the present and possible future oil situation. Naturally the present military and naval as well as essential industrial requirements should be and will be given primary consideration. There may be from time to time some regional relief in the oil situation, but on the whole it will undoubtedly remain very tight for the duration of the war.

Production of crude oil in the United States today is at a very high level. It is impossible to produce and refine sufficient oil to supply ordinary industrial needs and domestic requirements at pre-war levels, and at the same time keep pace with the increased tempo of the war. With the tremendous use of mechanized equipment and planes today in modern warfare, the European situation will require enormous quantities of oil and gasoline when the invasion starts. After Germany is knocked out of the picture, the tempo in the Pacific theatre will undoubtedly be stepped up tremendously with the result that any drop in the use of oil and gas in Europe will only make available that much more oil and gasoline

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.
[1] Member TAPPI; Chief Engineer, International Paper Co., New York, N. Y.

to speed up the knock-out blow to the Japs.

A great deal has been heard recently regarding the post-war oil situation. Mr. Harold L. Ickes in an article "Oil from Coal"—a 'Must' for America" *(3)* which appeared in the December 4th issue of Collier's states that "our known oil reserves are equivalent to 12 or 13 years' consumption at the pre-war rate of 1½ billion barrels per year. But these reserves cannot continue to produce oil at that rate. The wells produce more slowly each year."

He further points out that "there is a growing conviction that the use of natural crude oil for the refining of heating oil is reprehensibly wasteful of a fluid too precious to burn just to keep us warm, when a less expensive and more abundant fuel is available."

It is pointed out in the article that some two years ago Congress appropriated $125,000 for investigations by the Bureau of Mines on the hydrogenation of coal, and that more recently the Department of the Interior is supporting legislation before Congress for $100,000,000 with which to build demonstration plants for producing on a small commercial scale gasoline and oil from coal and shale.

The Toronto Financial Post on February 5th of this year carried an article "Will Coal Power our Cars" *(4)* and suggests "With world consumption of oil practically doubled in the past decade and the possibility of an oil shortage facing the world not many years hence, Canada, which is producing only 17% of her own requirements, must be particularly concerned."

This article further points out that officials of the Dominion Bureau of Mines stress the importance of research and the establishment of a test plant to delve further into the synthetic fuel situation.

Stories reaching this country from Europe indicate that a large proportion of the high octane gas required by the German army and air force is being supplied through coal hydrogenation.

Someone is heard to ask why all this worry about oil shortage. There have been reports of oil shortage and depletion of crude reserves for at least 20 years and still oil is obtained in large quantities. However, it is doubted if there are many who will place themselves on a limb to the extent of disagreeing with authorities of the United States Bureau of Mines and the Dominion Bureau of Mines.

Some oil geologists feel that the peak of oil development has been reached and that the reason to assume that the curve will continue on the downgrade is that territory in the United States which could be developed is diminishing.

It has been definitely learned from this war that gasoline and oil are primary items of national defense of the first order. Without proper motor fuels planes, tanks, and to some degree, ships are useless.

Negotiations and studies are underway for the construction by the United States of oil pipe lines from the Near Eastern oil fields to the Mediterranean Sea. With oil reserves depleted in this country, Asiatic pipe lines will be of little value to us in time of a future war if either the source or the discharge point is controlled by an enemy. A situation will be faced similar to the rubber situation: the source eliminated, making necessary the production of a synthetic substitute.

With all of this discussion and study into the oil situation, it is very doubtful if after this war, the oil reserves will continue to be used promiscuously with no regard or thought to the future. The author is firmly convinced that a great deal more thought will be given in the future to the exploitation of this natural resource with probably some control and use restrictions, especially when a comparison is drawn between estimated coal and oil reserves. Solid fuel reserves are estimated in this country to amount to approximately 5,000 years' supply; oil from 12 to 13 years. Certainly the answer is obvious.

Coal—Oil Mixtures

There are now in the process of construction and test, plants designed to burn mixtures of pulverized coal and oil. It is not known exactly at present how high a percentage of coal may be burned in this way. Some belief is entertained that it may run as high as 40%.

It appears that an installation of this kind is more in the nature of a stop-gap than a thoroughly practical solution of the fuel problem, especially in view of the oil situation.

Unless the fuels are blended by the shipper, the handling and storing of two fuels will be encountered instead of one; the installation of pulverizers and drying equipment for the coal, and heating and mixing equipment. Mixing and proportioning must be closely controlled; otherwise furnace and boiler operation will be seriously affected.

An engineer with one coal company had occasion a few months ago to go over in some detail a small commercial oil-coal mixture installation. This installation used a fuel made up of a mixture of 40% pulverized coal with bunker C oil, processed at high pressure, thus breaking down the coal to particles so fine that they would not fall out of suspension in the oil mixture.

He advises that from a study of the information available on the economic aspect, it appeared that the cost would run from 20 to 25 cents to process four barrels of the mixture, approximately equivalent to 1 ton of coal, if burned straight. He states that the economic advantage of the mixture would no where near approach this cost.

Why go to all this trouble and expense? Why not install pulverized coal equipment alone and be done with it.

Solid Fuel

The present tight solid fuel situation it is believed is due largely to two factors. The first, of course, is the manpower situation at the mines. It is reported that upward of 56,000 mine workers are now in the service and naturally these men are the cream of the crop, physically. This has raised the average age of the miners remaining and has tended to slow down production to some extent. Other better paid industries have drawn on mine workers and this, too, has tended toward fewer mine workers in the mines. The producers are now asking some government relief from the draft and toward replacement of some of the men who have been called into the service, in order that more help may be available at the mines.

The second factor is the loss of tonnage due to strikes and labor interruptions.

Bituminous coal production during 1943 was slightly over 585 million tons. However, stock piles decreased an estimated 30 million tons. Strikes and other labor tie-ups accounted for an estimated lowering of production amounting to approximately 40 million tons.

Many mills had stock piles of sufficient tonnage to cope with the situation. The above figures indicate, however, that consumption must have been somewhere near 615 million tons or 30 million more than produced. Today bituminous production is running approximately at the rate of 625 million tons annually and the estimated requirement for the year is about 620 million tons. This includes shipments to North Africa, Sicily, Sardinia, and Italy. It follows that production must be maintained in order that stock piles will not be further depleted.

The present quality of coal is largely down. Analyses coming to the attention of the author show, in some cases, increases in ash content of 30 to 40% and more from the same operations. In other words a 5% ash coal of 2 years ago may run 6.5 to 7% in ash today. This is due largely to the manpower situation and to the loss of control of quality output by the operators.

An easing of the coal situation during the war is not expected except in some degree through intelligent regulation. Mines will not be able to produce sufficient fuel for industrial and domestic requirements if strikes and mine tie-ups continue. Neither can high rates of industrial production be maintained if everything which comes out of the mines is considered coal because it is black.

Less Coal Consumption Not Likely

If the analyses of the post-war oil situation given above is correct, then it follows that coal consumption after the war will not drop due to reconversion of coal burning plants to oil. On the other hand, a general tightening up of oil for industrial purposes and possible forced conversions from oil to coal in plants now using oil in the conversion of those plants from wartime to peacetime industries may be expected.

After World War I the United States exported vast tonnages of coal to Italy, Spain, Portugal, Norway, Denmark, Sweden, and even to France and Belgium as well as South America; the European exports for rehabilitation purposes. After this war the same condition will undoubtedly prevail and even to a larger extent to Belgium, France, and Germany due to the probable heavier damage to mines and mines operations in those countries from the very heavy bombings to which they are being subjected.

It is quite conceivable that coal may become the source of many more synthetics including, of course, gasoline and oil, as pointed out above.

It is not intended in the foregoing to imply that a tremendous coal shortage is imminent in the post-war period. However, do not look for large surpluses and a buyers' market.

As to the price of coal in the post-war picture, prices will probably not drop materially. Mine wages will be maintained at levels higher than during the pre-war period. Demand for coal will be up and, therefore, no material reduction in price.

Revamping of Present Plants

With some 700 paper mills in the United States, not to mention numerous separately operated pulp mills, each faced with its own individual problems and conditions, it is of course impossible to standardize on any one revamping program. TAPPI Special Report No. 332 gives steam plant operating data from 126 paper mills, and seems to give a fairly representative cross section of paper mills in this country. A very few questionnaires were sent to Canada and perhaps one or two to Mexico.

It is interesting, therefore, to note the wide variation in boiler plant operating efficiencies of the reporting mills. They range all the way from below 60% to 96%, the last, of course, being an electric steam generator located in Canada.

Forty-eight plants or 38% of the reporting mills reported combined boiler operating efficiencies of 81% and above, with an unweighted average of about 83%. If this were the general trend in paper mills, there would be very little to discuss. Seventy-eight of the mills, or 62%, however, operate their boiler plants at 80% and below. The unweighted average efficiency of the 78 plants is 72.7%.

The questionnaire unfortunately did not request figures indicating yearly coal consumptions and, therefore it is not possible to present actual figures indicating the loss in dollars to the industry or the increased mine and transportation problem to the nation, caused by this comparatively low efficiency.

The American Pulp and Paper Association has kindly furnished the following figures as a basis for estimating the amount of coal consumed by the paper industry in 1943.

The total paper produced in the United States during the year 1939 was, in round figures, 13,500,000 tons and in 1943 it reached slightly more than 17,000,000 tons.

The 1939 coal, oil, gas and coke consumption figures were also available which made possible the construction of a coal equivalent of that year, amounting to 12,337,000 short tons consumed. This prorated to 1943 gives an equivalent coal consumption of 15,530,000 short tons.

Large Possible Saving

Now if it is assumed that the steam plant survey is representative of the industry, then it follows that by increasing the operating efficiency of the plants in the lower bracket to the average in the upper bracket an equivalent coal saving of approximately 1,200,000 tons per year, based on 1943 equivalent consumption will be realized.

This represents approximately $7,000,000, thrown away annually and after correcting for the amount of gas consumed, is equivalent to roughly 22,000 coal and tank cars uselessly hauled each year.

Some Helpful Suggestions

What are the reasons for these low efficiencies? On numerous occasions the causes of low efficiencies due to faulty operation have been indicated. These have undoubtedly received the attention of the plant operators and plants are probably now being operated as efficiently as possible with existing equipment. For convenience, however, some of the suggestions made in the paper "Fuels and Their Application" are repeated.

1—Attention should be given to the physical conditions of burning equipment, stokers and pulverizers.
2—If you had insufficient draft gauges it was suggested that you have your laboratory make them with materials available in every plant, and require your fireman to fire by them, if due to the war emergency they could not be purchased.
3—It was suggested that you determine the proper CO_2 to be carried and insist that you get it. If you had no Orsat apparatus, to either make or buy one and insist that it be used.
4—Insist that your boilers be kept clean, free of soot, and scale.
5—Make sure that your boiler settings are tight, free from air leaks.
6—Check pipe covering.
7—Make sure that all returns get back to your feedwater heater.
8—Check blowdowns.
9—Check combustible in the ash.
10—Check pulverization.

Assuming that the plant is being operated as efficiently as existing equipment will permit and that the plant is still in the lower efficiency bracket, then attention must be turned toward the formulation of plans for revamping the plant during the post-war period.

Some plants, replying to the questionnaire, estimate plant efficiencies because they have no flow meters. Certainly a plant cannot operate efficiently except by the greatest stroke of good fortune if it does not know what it is doing. It may think that it is operating at 75% efficiency only to find by actual measurement that it is operating at 60%.

Metering Equipment

To those plants which are attempting to operate without metering equipment, the suggestion is made that meters be purchased and installed at the first opportunity.

Some of the boiler plants in the lower efficiency bracket are hand fired. Needless to say, a hand fired unit is an inefficient unit in today's measure of efficiency. It would seem, too, from descriptions given for some of the stoker fired plants that in a great many cases, the equipment is antiquated and should be replaced with modern and up-to-date firing equipment.

Undoubtedly a large number of plants have no soot blowing equipment. Certainly soot blowers should be investigated and installed.

Feed Water Control

The question of feedwater treatment control was not specifically checked in the questionnaire. However it is safe to assume that a great many paper mill steam plants do not properly control feedwater treatment. An investigation of this subject may lead to very large dividends. A great deal has been published on this subject, and it will not be discussed here except to point out that improper treatment of feedwater may lead to large heat losses caused by boiler scale and improperly controlled blowdowns, not to mention troubles from pitting, corrosion, carry-over, etc.

Thirty-six plants reported no combustion control and several other plants reported only semiautomatic control. Here again investigation may indicate that combustion control apparatus can be installed and paid for out of the savings made in 1 or 2 years.

Forty plants reported neither economizers nor air preheaters and a large number, no superheat. This subject can only be touched upon briefly here. It may be more economical in some cases to install economizers rather than preheaters. In other cases the reverse may be true, all depending on the type of boiler and furnace equipment involved and space available. Certainly excessively high preheat temperatures are not advisable with most types of stoking equipment as too high preheat temperatures may greatly increase stoking and furnace maintenance. Therefore this subject is one for study of the individual plant, both as to cost and final results desired.

Superheat

The question of superheat, too, is one for study of the individual plant based on over-all economics. For instance, if paper machines are steam engine driven, high steam temperatures may definitely be deterimental. On the other hand, superheat may be of definite value if the steam is used to drive a steam turbo-generator.

In the above the author has touched, only briefly, upon a few of the items which should be considered in the post-war revamping of existing power plants. Certainly now is the time to give consideration to the post-war installation of such equipment as the above, in order to place the mills in a better position to compete in the post-war market.

New Plants

In what way will the fueal situation affect the post-war planning of new power plants.

1. The post-war boiler will undoubtedly be coal fired, either stocker or pulverized coal. In fact one large manufacturer of boiler plant equipment has informed the author that few, if any, requests are being received for figures on plants for the firing of oil.

2. Attention will be given to the more efficient operation of recovery units and waste incinerators and in isolated cases, there may be some installations of electric steam generators.

3. The trend will be toward higher operating pressures in paper mill boiler plants. Plants designed for operation at 400 to 600 p.s.i. and higher will be more common and higher final steam temperatures made possible by the installation of more superheaters. These installations, especially in locations where it becomes advantageous to generate low cost byproduct electric power.

4. In some instances higher pressure boilers may be installed in conjunction with existing low pressure plants. The high pressure unit will supply steam to drive a steam turbo-generator, the turbine bleeding or exhausting into the existing low pressure boiler header. This has been done in at least one case in our own organization and has made available a sizeable block of 4 mil electric power.

5. Boilers will be equipped with suitable heat recovery equipment, either air heaters, economizers, or a combination of the two.

6 Unless definite steps are taken to increase mine control and quality, new plants will have to be designed to cope with higher ash, lower ash fusion, and lower B.t.u. coal. As a matter of fact high quality coals are rapidly being depleted, in some districts completely worked out, leaving high ash coals to be produced.

A few of the larger mines have installed cleaning plants to reduce the ash content of the coals produced, but it appears that the amount of cleaning plant coal which will be available in the near future, will be a very small percentage of the total production.

7. Suitable combustion control and metering equipment should certainly be a part of every new plant.

8. More attention will be given to the economic use of steam, electricity, air, and water in the mill by the use of more efficient equipment throughout the mill as a fuel conservation measure.

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4. "Will Coal Power Our Cars?" *Toronto* (Canada) *Financial Post*, February 5th, 1943.

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PULP Stones by Carborundum have been going right along producing high grades of pulp with rather unprecedented economies. Here are some important things to remember.

Pulp Stones by Carborundum are made in both Carborundum Brand Silicon Carbide and in Aloxite Brand Aluminum Oxide—depending upon your grinding conditions.

They are produced in various structures—under scientific control.

The outstanding strength of the design of these stones assures long life and safe, continuous operation.

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The Carborundum Company, Niagara Falls, N. Y.

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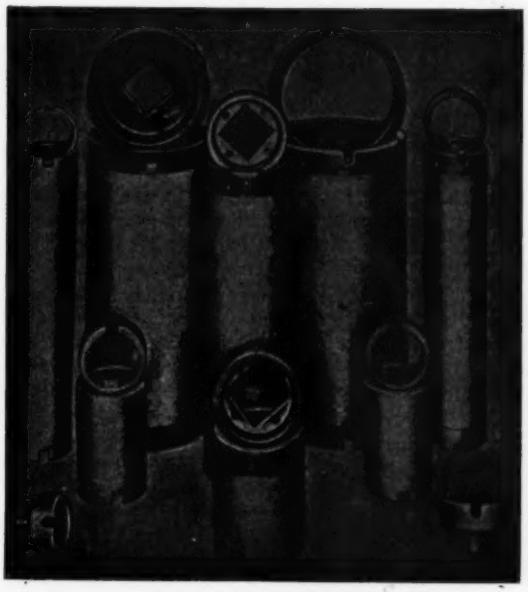

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New York Paper and Pulp Market Review

Paper Demand and Production Continue At High Level — Pulp Supply Situation Tight—Collections of Waste Paper Now Reported 5 Percent Under Goal — New and Old Rag Markets Are Active.

Office of the PAPER TRADE JOURNAL,
Wednesday, July 12, 1944.

Paper demand in the wholesale market continues heavy in relation to supply, with the trend in civilian demand upward, according to many reports received this week from manufacturers' representatives, jobbers, and general paper merchants. Current reports also reflect the expectation that an increased demand for paper for literature of all kinds will occur as trade post-war plans are put into effect to secure peacetime business, as the world conflict draws to a close. More paper than ever before is forecasted to be required to meet the future needs of industry and trade.

The index of general business activity for the week ended July 1 rose to 143.7, from 143.6 for the previous week, compared with 137.9 for the corresponding week last year. The index of paper board production was 162.6, compared with 157.0 for the previous week, and with 151.2 for the corresponding week last year.

Paper production for the week ended July 1 was estimated at 92.4%, compared with 77.4% for 1943, with 67.6% for 1942, with 72.8% for 1941, and with 69.0% for the corresponding week in 1940.

Paper board production for the week ended July 1 was 95.0%, compared with 92.0% for 1943, with 59.0% for 1942, with 74.0% for 1941, and with 60.0% for the corresponding week in 1940.

The OPA Regional Administration Office states a new order, now in effect, established dollar and cents ceiling prices on one-piece corrugated garment boxes sold by jobbers in the metropolitan area. The order provides that a jobber shall continue to sell boxes of the same size, number, and inside dimensions, as sold in March, 1942. If the inside dimensions of the box are reduced, the price established must be reduced in proportion to the lowered cost.

Wood Pulp

Increasingly larger tonnages of chemical wood pulp for nitrating purposes, both in the United States and in Canada, may make it necessary in the prime interests of war requirements, to more strictly allocate the supply of all grades of unbleached sulphite pulp. The inability thus far, to increase collections of waste paper up to the requirements of the WPB to augment the critical wood pulp supply, continues to remain an important and unfavorable co-factor in the pulp supply situation.

Rags

Broad demand for all grades of new cotton rags is reported active this week. Prices are strong, with mill buying at around ceiling levels.

Trading in old cotton rags is active under a good, steady demand by roofing and fiber mills. Prices are firm at ceiling levels.

Old Rope and Bagging

No important change has been reported in the old rope market this week. Mill demand for old Manila rope continues urgent and to absorb all available supplies to meet war and prime industrial needs. Other fibers are in good demand. Prices on all fibers are firm.

No important change in the low rate of trading activity in scrap bagging has been reported at this date. Prices are still soft and continue nominal.

Old Waste Paper

Mill demand for paper stock continues urgent. Estimates indicate a substantial increase in the quantity now being salvaged is practicable. More and constant publicity, emphasizing the need for more waste paper to manufacture paper board in which to package vital war supplies for our fighting forces, should increase collections. The goal of 8 million tons should be reached this year, but with more and more fiber boxes going overseas, the supply of recoverable strong fiber must, of course, steadily decrease. Still, much good kraft paper is not finding its way into organized channels for its prompt reuse in pulping.

Prices on all grades of paper stock are strong at ceiling levels.

Twine

No important change has been reported in the twine market at this date. Demand is good, with prices firm on all available grades.

Hinde-Dauch Tonnage Maintained

Tonnage production for the first half of 1944 of Hinde & Dauch Paper Company of Canada, Ltd., were substantially the same as in the comparable period a year ago, vice-president and general manager L. F. Winchell states in a letter to shareholders accompanying current dividend cheques.

It is possible that the company may lose a little ground during the second half of the year, Mr. Winchell said, because of manpower shortage. Shortage of raw materials has increased to the most critical point and the company is faced with lack of sufficient supply to enable it to run continuously.

At the same time, Mr. Winchell continues, demand for the company's products for top priority war needs and the most essential foodstuffs, and the civilian requirements, have continued to develop to a point where a new government limitation and supply-prohibiting order has just become effective.

Installs New Saw Unit

Work is progressing at Powell River, B. C. on the Powell River Company's new sawmill unit for converting forest waste logs of small diameter to the common 32-inch pulp blocks.

A single-saw unit will be put into operation as soon as the dredging of the log pond, now under way, is completed.

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These are days when every last hour of usefulness must be squeezed out of equipment, — proof-of-quality days for TENAX FELTS. Their fifty year record of production and service is being gloriously extended in these times of scarcity . . . we still make satisfactory deliveries.

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MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL.
Wednesday, July 12, 1944.

BLANC FIXE—Quotations on blanc fixe continue firm and unchanged. Demand is reported fair. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—Current demand is active but supply is reported adequate, as production is rising. Quotations are unchanged. Prices on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots, at works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24½ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point.

CAUSTIC SODA—Demand continues heavy. Production high but stocks are lower at plants. Prices are unchanged. Solid caustic soda is quoted at $2.30 per 100 pounds; flake and ground is quoted at $2.70 per 100 pounds; all in drums, car lots, at works.

CHINA CLAY—Quotations on china clay are unchanged. Current demand is reported fair. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mine. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Demand reported heavy with all essential requirements met. Quotations are unchanged. Chlorine is currently quoted at $1.75 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—OPA temporary ceiling price now in effect on "G" gum rosin is $5.75 per 100 pounds, in barrels, Savannah. "FF" wood rosin is quoted at $5.70 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is currently quoted at $6.02 per 100 pounds, f.o.b. works.

SALT CAKE—Prices on salt cake are reported unchanged for the current week. Use in paper industry at relatively low level. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand continues for domestic requirements and market is still tight. Production lower, but stocks are higher at plants at this date. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Larger shipments of corn are reported this week and the supply situation is reported improved for processors and outlook appears more favorable. Quotations unchanged. The pearl grade is quoted at $3.72 per 100 pounds; powdered starch at $3.83 per 100 pounds; all prices in bags, car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA — Demand reported active. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.25 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is now quoted at the reduced price of $1.85 per 100 pounds, in bags, at works.

SULPHUR—Quotations on sulphur continue to conform to prevailing market prices. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price at Gulf Ports is $17.50 per long ton.

TALC—Prices on talc continue unchanged. Demand moderate. Domestic grades are currently quoted at from $16 to $21 per ton, at mines; Canadian at $24 per ton. All prices in car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract...	*$58.00	@	—
Sheets	66.00	"	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping...	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag.....	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1.....	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½....	1.00	"	—
White No. 2.....	.90	"	—
Anti-Tarnish M.F..	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet....	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.....	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute.....11.25		@	—
No. 1 Manila Wrapping, 35 lb.....	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.....	5.75	"	6.00
Boards, per ton—			
News *48.00		@	—
Chip *48.00		"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards...	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1..	$10.55@$12.75	$11.70@$14.25
No. 2..	9.65 " 11.75	10.80 " 13.25
No. 3..	9.20 " 11.25	10.35 " 12.50
No. 4..	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated...	$13.65	@	$15.50
No. 2 Glossy Coated...	12.40	"	14.00
No. 3 Glossy Coated...	11.60	"	13.25
No. 4 Glossy Coated...	11.15	"	12.75
No. 1 Antique (water-marked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.....	9.35	"	10.75
A Grade S. & S. C...	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C. ..	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite.....	$86.00
Unbl. Softwood Sulphite.....	74.00
Bl. Hardwood Sulphite.....	83.50
Unbl. Hardwood Sulphite.....	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich ..72.00 @	82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate...	82.00
S. Semi Bleached Sulphate...	75.00
N. Unbl. Sulphate.....	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	72.00
Unbl. Soda	68.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area).....	10.50
West Coast (out area).....	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area).....	9.50
West Coast (out area).....	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

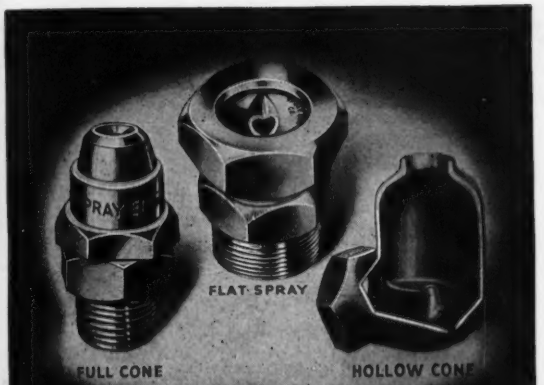
Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1..	6.50	@	7.25
Silesias No. 1.....	—	"	5.75
New Unbleached...	6.75	"	7.50
Blue Overall	—	"	5.50
Fancy	—	"	3.50
Washables	—	"	3.00
Bleached Khaki Cuttings	—	"	4.25
Unbleached Khaki Cuttings	—	"	3.50

* OPA Maximum Prices.



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SPRAY ENGINEERING CO.

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CONTINUOUS BEATER & REFINER FOR ECONOMICAL STOCK PREPARATION

—:—

Numerous installations have proved its ability to improve quality and with a substantial saving in power.

—:—

Adaptable for refining knots and screenings. Continuous and closed systems.

—:—

The Hermann Claflin is built in two sizes at the present time. Large capacity No. 3 ready in near future.

—:—

Operated at Conventional Jordan R.P.M.

—:—

THE HERMANN MANUFACTURING CO.

Also Mfg's. Sheet Making-Pulp Testing Apparatus

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YOU'RE GOING TO NEED PAPER CONVERTING MACHINERY

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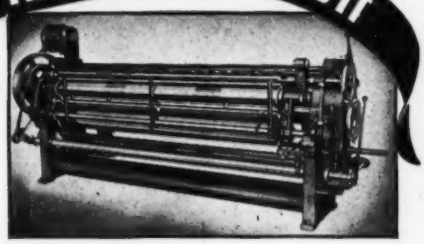

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WHILE our plant facilities are now engaged in producing equipment to speed Victory—for there's still a big job for all of us to do — discuss today your converting machinery requirements and be ready tomorrow. Early planning will help you do a better job—after Victory—when we can work in peace.

PAPER CONVERTING MACHINE CO.

GREEN BAY, WISCONSIN

Manufacturers of paper converting machinery for all purposes

PRICE & PIERCE ltd.

Wood Pulp & Paper Agents

60 East 42 Street New York, N. Y.

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Mixed Books	.85	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	.85	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.24	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila		"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07¼
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03¼
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¾
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¼

Domestic Rags (Old)

White No. 1 — Repacked	3.80	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2 — Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
No. 1 Clean bright—			
Sisal Strings			.04
No. 2 Clean bright—			
Sisal Strings			.03
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 3	1.75	"	1.80
Wool Tares No. 1	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.75
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Cer tThreads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	2.50
South American	—	"	3.00

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.75
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Cer tThreads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	2.50
South American	—	"	3.00
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	—	"	3.25
New Zealand Wool Pouches	—	"	3.50
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¾	"	.05
New White No 1.	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06¼
Underwear Cutters, Bleached	.06¼	"	.06¾
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¼
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached Blue Cheviots	.06½	"	.06¾
Fancy	.05½	"	.06
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¾	"	.03½
New Canvas	.06¼	"	.06¾
B. V. D. Cuttings	.06¼	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.30
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	1.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—